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SOFTWARE NEWS DOMINATES EMBEDDED SYSTEMS SHOW

RTOS, tool updates take center stage; 2004 likely to be a different story

BY EDWARD J. CORREIA

SAN FRANCISCO — Foot traffic on the exhibit floor of the 15th annual Embedded Systems Conference held at the Moscone Center here in late April was brisk, with attendees gathering more news about updated software tools and less about hardware. But those interested in software should enjoy it while it lasts; next year's ESC will be joined by the hardware-heavy Electronica show.

SD Times SHOW REPORT

RTOS developer **LynuxWorks Inc.** released Spyker 2.0, an update to its instrumented trace tool for its LynxOS and Linux operating systems that the company claims offers significantly increased system execution visibility and more post-mortem insight into system crashes. "These enhancements are designed to provide more understanding of system operations and [allow developers] to fine-tune performance of the operating system," said Bob Morris, vice president of sales and marketing at LynuxWorks. Spyker does not require changes to source code.

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C# Builder A First Step For Borland

BY ALAN ZEICHICK

Borland Software Corp. continues its push into .NET with its announcement of C# Builder, an IDE for Microsoft's programming language, now recently approved as an ISO standard. Borland had previously discussed the C# tool under the code name "Sidewinder" ("Borland Fires 'Sidewinder' at VS.NET," March 1, page 3). The company mentioned—to no surprise—that it would be developing a more comprehensive tool suite around C#.

C# Builder provides basi-

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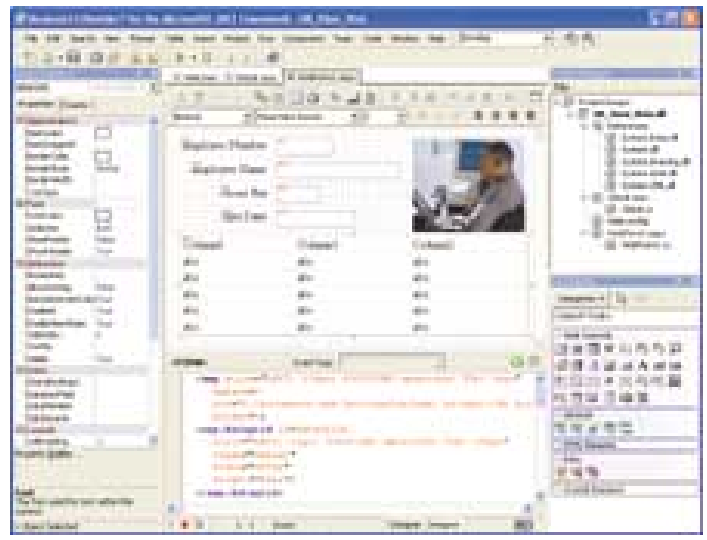


The C# Builder IDE should look familiar to anyone with experience in C++ Builder or Delphi.

OASIS Proposes Standard for Business Documents

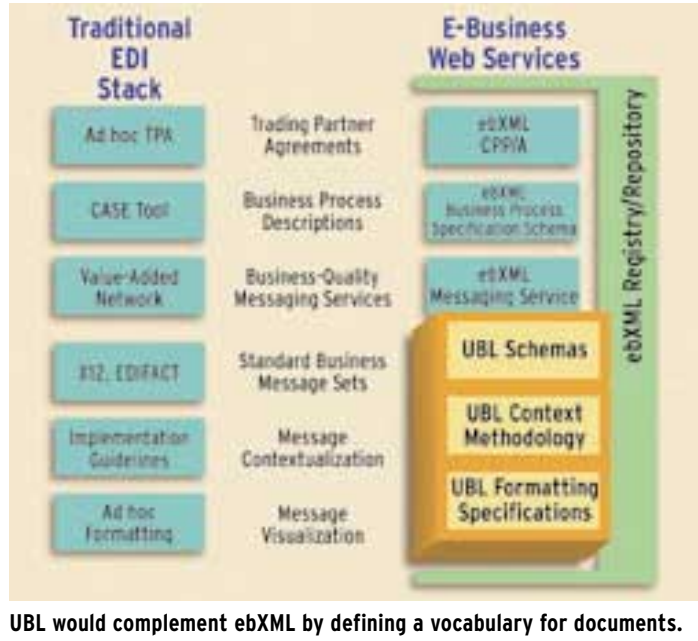
But will companies adopt common language that crosses industries?

BY YVONNE L. LEE

The Organization for the Advancement of Structured Information Standards (OASIS) is proffering what it hopes will be a universal language for business documents used on the Web. But the universal language could turn out to be a computer version of Esperanto—a language invented for cross-cultural communication that never has gained wide adoption.

The Universal Business Language (UBL) seeks to find a single vocabulary for what OASIS (www.oasis-open.org) calls the "payload" or the actual content of documents, such as purchase orders and invoices exchanged in conducting business. It works with ebXML, which specifies how messages are passed, stored and identified.

Analysts think the effort is unnecessary because there aren't many businesses that exchange documents across industries, and when they do, it's usually done from separate divisions using a specific industry's protocols. Furthermore, when businesses need to communicate, an industry leader usually determines the ground rules, not a standards body.



UBL would complement ebXML by defining a vocabulary for documents.

Using Electronic Data Interchange (EDI), companies conducted business on private networks using more expensive mainframe tools. With ebXML, the data format is a text-based XML document that any company can use. In addition, because transactions travel across the Internet, businesses don't need to invest in private networks. "Now, they can do it vastly more cheaply than you could under EDI," said Jon Bozak, distinguished engineer at Sun Microsystems Inc. and technical chair for the UBL committee. However, either standard can be used apart from the other. The problem with the

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▶ *The* ***Middleware Company*** *compared the .NET Pet Shop Web application on Windows Server 2003 to the performance and scalability of a comparable, optimized J2EE™ application. The .NET connected application on Windows Server 2003 is more than 250% faster, 76% less expensive based on price/performance, and required 11,000 fewer lines of code.*

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Q-Link Uses XForms to Mutate Data

Latest version of platform puts logic behind application components

BY DAVID RUBINSTEIN

The ability to design standards-based forms and add business logic behind them has been added to the latest version of the Q-Link Platform, released earlier this month by Q-Link Technologies Inc. The platform, a Java application that creates a level of abstraction above the J2EE infrastructure to reduce the time and cost of building new Java applications, provides components and tools for the custom creation of new components, business rules and workflows.

Greg Wilson, chief technology officer and founder of Q-Link (www.qlinktech.com), said the UI design tool within version 5 of the platform is the first to support XForms, a specification that is in draft form at the World Wide Web Consortium for consideration as a standard. The specification defines the creation of forms with greater capabilities than HTML forms, he said.

According to Wilson, users can design a user interface for a step in a workflow, including labels, pull-down bars and buttons; the form would be built by assembling XForm Components in the platform's Process Application Designer tool. At runtime, the components execute data queries or calls into ERP systems, for example, and return XML, which then can be translated to such things as JavaScript or HTML, he explained. The forms also can be used to translate the XML into ActiveX controls or Java applets, he added.

Q-Link is one of the technologies that media solutions provider Unisys Corp. is building into its Media Ensemble, which will be released next year. The goal is to enable traditional newspaper organizations to provide content for channels other than newspapers by repurposing editorial content, and to easily draw from news wires, their own libraries and other outside sources to manage multimedia content delivery without duplicating tasks.

XForm Components will allow Unisys media customers to create reusable interfaces to access enterprise content repositories and multiple databases to transform the contents of a newspaper story, for example, into HTML for posting on a paper's Web site, or for use in a broadcast medium, according to David Stewart, vice president of Media Ensemble Solutions at Unisys (www.unisys.com).

Unisys' current newspaper and magazine solution, called Hermes, defines a workflow for routing editorial copy and ads, and moving them through the layout and production cycles. That workflow, though, is limited when newspapers try to look at their assets from an enterprise level. "Hermes is a sealed environment," said Bob Tilley, Global Media Solutions director. "The workflow is good within that, but the business process workflow exceeds that. We want to be able to handle that. There's managing human resources, or digital asset management, that might require an integration with PeopleSoft or SAP or Avid, so that when an activity occurs and needs to communicate with those other systems, it automatically kicks off another workflow."

The Q-Link Platform consists of the workflow engine, a persistent object framework and an integration framework, and includes tools for creating rules, deploying and managing components, designing user interfaces and defining objects to extend data models, Wilson said. The components that ship with version 5.0 provide routing and load-balancing, as well as full interaction with UDDI at design time; support FTP, SQL and IBM's MQSeries messaging middleware; and include adapters from iWay to provide access to SAP and Siebel, Wilson said. A "Fast Track" solution starts at US$25,000 for the development tools and runtime server. ■

MICRO FOCUS BRINGING WEB SERVICES, COBOL TOGETHER

BY ALAN ZEICHICK

Micro Focus International Ltd. is bringing COBOL and Web services together with a new version of its Net Express development suite for Unix and Windows, following through on its product vision unveiled last December.

The company was set to release the Windows version of Net Express 4.0 on May 14; general availability for the Unix version is scheduled for mid-September, according to Ian Archbell, vice president of product management, who said that some customers already have been developing and deploying applications on early versions of the upgrade.

According to Archbell, the opportunities for COBOL remain strong, even among the company's traditional IBM-centric customers, because "IBM has opened a gap with WebSphere. They're not making it easy for customers to use COBOL when they want to." However, he acknowledged that many developers are looking toward Java, or mixed-mode Java and COBOL. "Use COBOL for the business rules," he argued.

The biggest changes with Net Express 4.0, according to Archbell, are its native support for Web services. "You can use Web services with Java—there's no wrappering," he said, adding that other COBOL implementations often use Java calls to enable Web services and SOAP functionality. "Net Express does SOAP and JCA directly, not just JNI, which is good for transactions," he stated.

He also said that the new version makes it easier for COBOL developers to read and write XML documents directly, using a new syntax and language extensions.

Looking ahead for Net Express, Archbell said that the company (www.microfocus.com) is still on track for building a .NET compiler for its COBOL IDE. He said that the .NET functionality would be included as part of a future version of the Windows product, and not as a separate .NET product. "Maybe it will be version 4.5," he said, adding that .NET developers would have a choice of continuing to use the Micro Focus IDE, or plugging the compiler and COBOL debugger into Visual Studio .NET.

He said that the company also is working on a Net Express plug-in to IBM's Eclipse open-source IDE, which might be ready in September or October. ■

Staying One Step Ahead of Software Pirates

Security vendors adding hardware, other anti-theft feature sets

BY YVONNE L. LEE

Armed with an International Data Corp. study released in April indicating that cutting down on software piracy by 10 percentage points can add 1.5 million jobs and increase economic growth by US$400 billion globally, security software makers are battling to stay ahead of those who would decrypt their schemes to illegally copy and sell software.

The IDC study, commissioned by the Business Software Alliance, shows "that when piracy is reduced, the majority of the benefit remained in the country surveyed," said Robert Holleyman, president and CEO of the BSA (www.bsa.org), a trade association established in 1988 to reduce software piracy. "The biggest beneficiaries are local developers, local channel partners and local IT services in those countries."

The BSA claims that the greatest benefit would go to the local economies because with reduced piracy, local entrepreneurs would have an incentive to create software companies.

The study says that China, Russia and Latin America had high piracy rates and that these countries had weaker IT services sectors, while the U.S., Great Britain and Japan were among those with the lowest piracy rates.

The study asserts that reducing piracy might increase the IT services in the countries with high piracy rates. In fact, the reverse may be true, said David Lynch, vice president of worldwide marketing at security vendor Rainbow Technologies. Countries with strong IT sectors may have lower piracy rates because people in those countries have a different attitude toward software intellectual property, he said.

"The general culture doesn't respect software IP. They regard software in the same way as a hammer or a tool: 'I can pass this on to anyone I want,' basically," he said.

The trick, security software vendors said, is to create an anti-piracy scheme that is strong enough to prevent hackers from undoing it, but fashioned elegantly enough so as not to annoy legitimate users.

"One of the things we're concerned about at Aladdin is making sure the end user isn't punished," said Roger Wood, senior product manager for Aladdin Knowledge Systems' Privilege anti-piracy software protection tools. "You don't want to punish the end user, because most of them are honest."

Microsoft irked its customers last year when it introduced a validation scheme for Windows XP and Office XP. This process requires customers to type in a code when installing the software. During the installation process, the anti-piracy software records information about the computer onto which the software was installed. If the customer wants to reinstall the software or apply a software patch, the software will first check the hard-

▸ continued on page 14

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Reasoning: Build Quality Into Software

BY DAVID RUBINSTEIN

Reasoning Inc., a provider of a hosted software quality-assurance service, is counting on a new chief executive officer and a move into the Java world to bring the company closer to its goal of profitability.

William Payne formally took the reins from Scott Trappe on March 31, when Payne said the company was gearing more toward sales, marketing and product rollouts than it had been. In October 2001, the company said it was on track to become profitable in 12 months. While Payne would not discuss specific finances of the privately held company, he said Reasoning is "moving in that direction."

Seeing Java as a potential growth area, Reasoning (www.reasoning.com) in late April announced Inspection Services for Java, an automated way to analyze and inspect Java code for defects. Now, Payne said, the company has three defect categories in the service—null pointer dereferences, out-of-bounds array access and invalid string comparisons. More will be added later this year, Payne said. Looking to the future, Payne said Reasoning will expand beyond its static code analysis into the area of rules-based measurement.

Inspection Services for Java continues the hosted, automated nature of the company's discontinued Instant QA brand. Java code is collected and run through utilities to prepare it for analysis, Payne explained. Then it is run through an automated set of servers that throw up indications of problems within the code. False positives are run through another set of servers for removal, he continued, with the final stage resulting in defect reports for managers and software engineers. The turnaround is five to 10 business days, Payne said, with a cost of roughly 18 cents per line of code.

Reasoning is planning to expand into rules-based measurement, says Payne.

"We have reviewed 75 million lines of code, and we'll be using that as a macro metric" to help customers see where their development efforts stand when compared with other industry projects, Payne said. "It's not just getting the data but what you do with it," he added. "People are using the data to improve their processes."

With the new service, Reasoning is trying to move quality assurance closer to its name, according to product marketing director Jeff Klagenberg. "There's a difference between assuring quality and testing for it," he said. "What we're doing actually is quality control, as part of a customer's existing process. We're not a new process."

Another macro metric the company plans to publish is an index that shows an average number of defects per lines of code. "We focus on defects and show clients how they compare against other development shops," Payne said, allowing them to gain a clear understanding of the quality and maturity of their code. ■

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Quest Releases J2EE Diagnostic Suite

Incorporates Sitraka tools for top-to-bottom monitoring and repair

BY DAVID RUBINSTEIN

Completing an integration with the tools acquired with Sitraka Software Inc., Quest Software Inc. on May 13 released Quest Central for J2EE, a tool set for system monitoring and application diagnostics that comprises Foglight for J2EE, PerformaSure 2.1 and JProbe 5.0.

"We believe we now have unrivaled depth of coverage in the J2EE space," said Josephine Coombe, director of product marketing for J2EE solutions. "This gives views from top-level monitoring to diagnostics to code-level inspection. The focus is to help customers accelerate the detect-diagnose-repair cycle."

Quest Central for J2EE will include PerformaSure 2.1, which was to be released in conjunction with the larger offering. New features in PerformaSure include a "fast find" button that works off a list of defined metrics to give users a quick way to highlight infrastructure, code or database calls that might have caused problems, according to Brad Micklea, Quest's product marketing manager for J2EE solutions.

"In a test environment, people might have the luxury of time to find problems," Micklea said. "In a production environment, literally every minute you lose is lost revenue. This puts pressure on people to solve problems as soon as possible."

Also new to PerformaSure 2.1 is a dual-mode agent that lets users define thresholds in Foglight that trigger PerformaSure data sessions when those thresholds are approached, giving data before the thresholds are exceeded to help determine the cause of any failures, Micklea explained.

JProbe 5.0, released in April, offers improved performance, especially on the Solaris platform, for use in drilling down to a specific line of code to repair a problem, Coombe said.

The company (www.quest.com) plans to release version 4.0 of Foglight for J2EE in July, adding a connector called Spotlight on Siebel Response Time that leverages the existing Siebel agent to look at calls from the client to diagnose problems. "It adds what we're calling a business perspective interface," said Chris Spacko, Quest's product marketing manager for monitoring solutions. "This gives a business analyst a complete application perspective, showing response times for various transactions. You can see how the database and Web server, for instance, are performing in one central view." The company plans to add a Spotlight on Oracle agent for monitoring database functionality by the end of the year, Spacko said.

The company has not set a price for Quest Central for J2EE; customers will continue to buy the products individually. Micklea said Quest is reviewing its pricing plans. ▮

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Glider Runs J2EE Apps Locally for Testing

BY YVONNE L. LEE

Ensemble Systems Inc., a Richmond, British Columbia-based consulting and J2EE services firm, is shipping software it developed as a result of solving its own problem: how to test J2EE applications without the overhead of a full application server.

The new software, Glider, shortens the time it takes to test J2EE applications by enabling developers to run the applications locally while testing them.

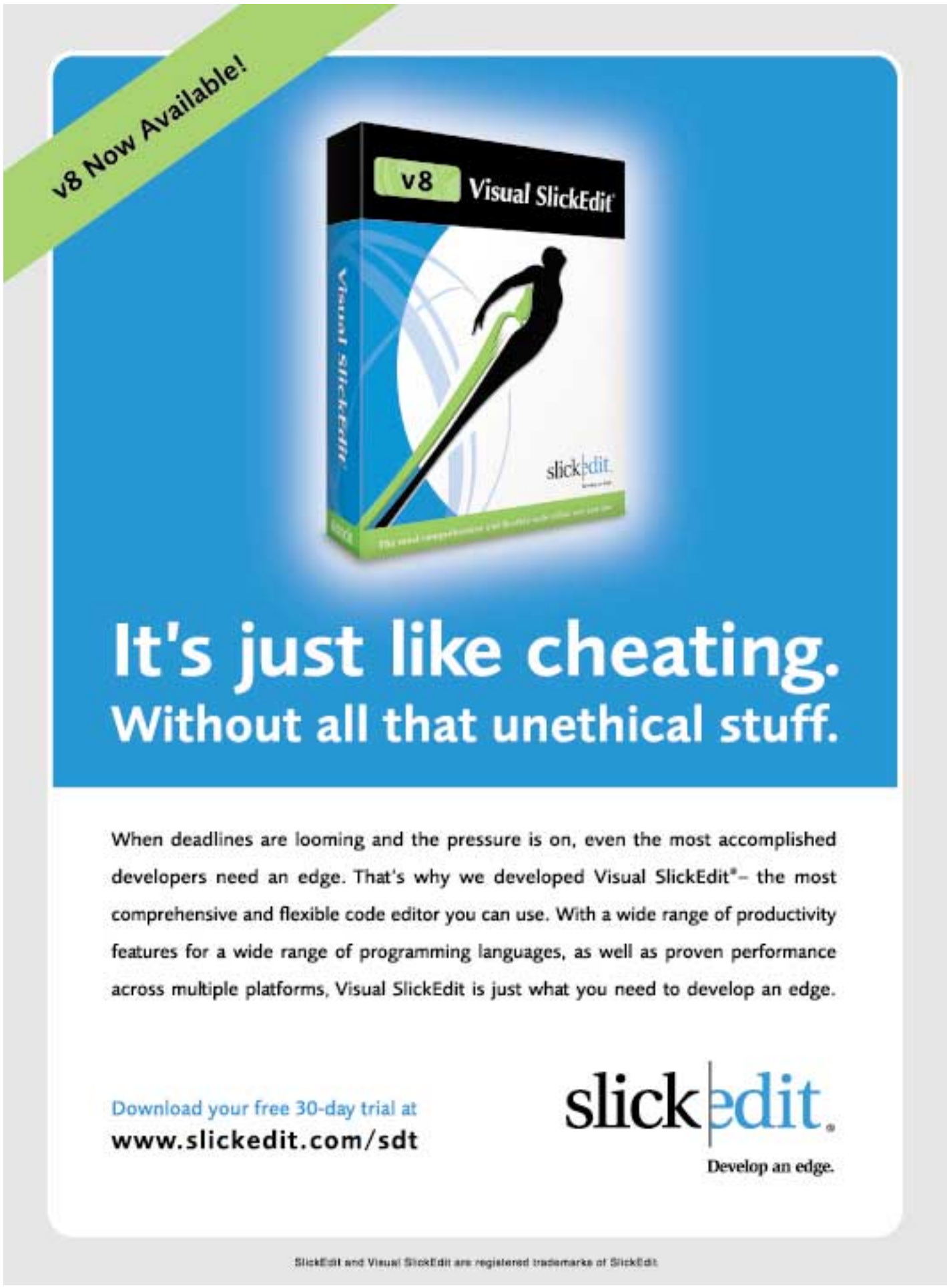
Glider consists of its user interface and a simulated J2EE server. The J2EE server has a Web container and a simulated Enterprise JavaBean container. With it, developers can test EJB 1.1 and 2.0 beans locally, and then worry about server configuration issues separately. This makes it possible to code, compile and debug applications without having to start the servers, and then package and deploy the application before debugging.

Also, separating the programming issues from server-specific issues makes it easier to troubleshoot where the issues arise.

"By the time you get to the server, your business logic should be fine," said Mike Bacinschi, founder and president of Ensemble (www.ensemble-systems.com).

Glider is available immediately as a stand-alone application, an Eclipse plug-in or a plug-in for IBM's Rational XDE model-based development suite. Glider also will run embedded within an upcoming release of IBM's Rational Rose UML modeler. The stand-alone version will work with any text editor, so developers can create and modify the code in the text editor and use the Glider environment to test and debug the application.

Glider costs US$499 per seat. ■



LIBERTY DRAFTS SECOND IDENTITY SPECIFICATIONS

BY YVONNE L. LEE

The Liberty Alliance, a multivendor group seeking to establish a common system for signing onto networks, in mid-April released drafts of its Phase 2 specifications for creating and managing federated identity-based Web services.

Federated identity management makes it possible for a person or service to be recognized in personalized services across multiple Web sites while taking into account both security and privacy across those sites, without requiring a single repository for that information.

The organization also issued implementation guidelines and best-practices documents for complying with local regulations and creating a more trusted relationship with business partners. The guidelines address global privacy laws, security recommendations, user choice and control recommendations, and guidelines for protecting against Internet vulnerabilities.

The Phase 2 drafts and related privacy and security documents are available at www.projectliberty.org. The final version is due in the third quarter. ■

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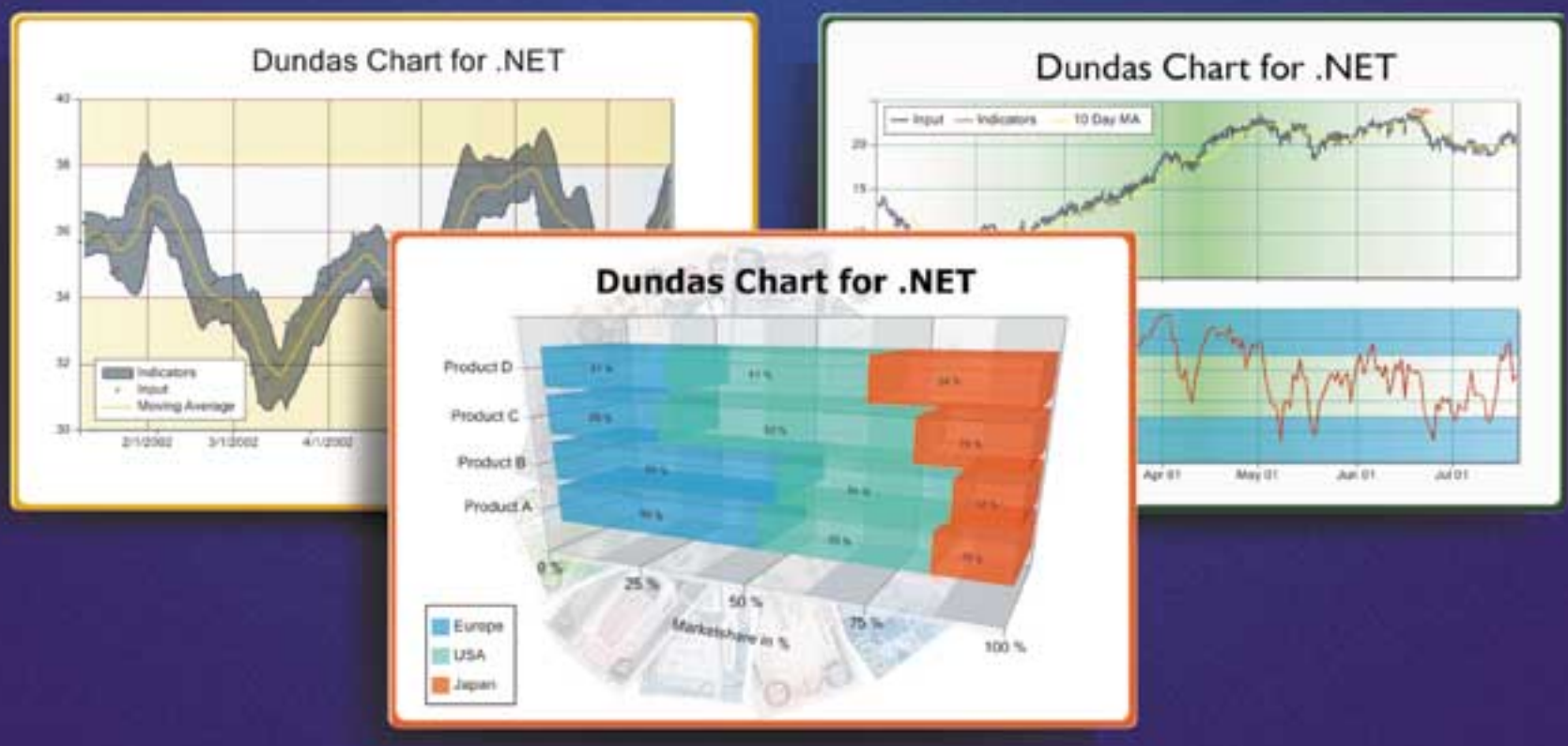

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News Briefs

COMPANIES

WebMethods Inc. and **Informatica Corp.** have jointly developed the Business Activity Platform, which combines the companies' integration and extract-transform-load (ETL) utilities. Both companies will be selling the solution . . . **Open Source Development Labs Inc.** has appointed Stuart Cohen to the newly created position of CEO. The Linux advocacy consortium plans to increase the number of sponsors and attract Global 2000 corporations to join the organization. Previously, Cohen was VP of marketing at RadiSys Corp.

PRODUCTS

Atalasoft Inc. has announced a new .NET imaging component, **DotImage**. Written in C#, the component will add raster, document and ASP.NET Web imaging functions to .NET applications. A beta release was scheduled for May 13, and general availability is planned for early July . . . Fiorano Software Inc. has released **Tifosi 2002 ESB**, an enterprise service bus system that works in conjunction with the company's Java-based Tifosi integration broker suite . . . InstallShield Software Corp. has upgraded its hosted **InstallShield Update Service** to provide background downloads and download restarts. The company also now allows enterprises to host and manage the service internally . . . **BX for Java** is a new graphical IDE from Integrated Computer Solutions Inc. that lets developers prototype and build pure AWT or Swing applications. BX costs US$1,050 for Macintosh or Windows versions, $1,925 for Linux, $2,275 for Unix or $3,500 for all platforms . . . Shunra Software Ltd. has released **Storm 3.0**, an update to its WAN emulation suite for software performance testing. The new version creates a mirror of the existing enterprise network, which can be used to combine WAN performance metrics with end-user emulation . . . JNBridge LLC has updated its **JNBridge Pro** tool, which extends Java classes to run on .NET. The new version, 1.3, allows transactions via thread-true classes, supports pass-by-value of data between objects, and provides direct mapping between Java and .NET collection classes. It also allows J# applications to call Java classes . . . Phaos Technology Corp. is offering a **Java Cryptography Extension** developers' toolkit for Sun's Crypto Accelerator 1000 server . . . Version 3.1 of **Dundas Chart for .NET**, from Dundas Software Ltd., includes an advanced charting wizard and the ability to draw 3D cylinder charts or add interlaced strip lines to graphics. It also has expanded statistical features, including normal distributions, ANOVA and T-distributions.

PEOPLE

XML appliance vendor DataPower Technology Inc. has hired **Jim Ricotta** as president and CEO. Ricotta, who previously was general manager of Cisco's content networking division, takes over from founder **Eugene Kuznetsov**, who remains chairman and CTO.

STANDARDS

BPEL4WS, one of several competing specifications for Web services choreography, has been submitted to OASIS. The **Business Process Execution Language for Web Services** spec was initially developed by BEA, IBM and Microsoft. The rival **Web Services Choreography Interface** (WSCI), developed by BEA and Sun, was turned over to the W3C in August 2002 . . . Several security vendors have proposed an XML-based vulnerability classification schema through OASIS. The vendors—Citadel, GuardNet, NetContinuum, SPI Dynamics and Teros—offered the **Application Vulnerability Description Language** to help define application vulnerabilities across the development life cycle. The group expects a final specification by the end of the year . . . The Java Community Process is offering a public review of **JSR-185, Java Technology for the Wireless Industry**; this spec provides an overall architectural description of wireless Java clients, and wraps eight separate JSRs that cover mobile devices. There is also a proposed third final draft of **JSR-151, Java 2 Enterprise Edition 1.4**, and two of its subspecs, **JSR-152, JavaServer Pages 2.0** and **JSR-154, Java Servlet 2.4**. The proposed second final draft was released in November 2002. ■

Sunopsis Offers Real-Time ETL

Java-based engine leverages native database calls

BY ALAN ZEICHICK

From Europe to North America: Sunopsis S.A., an Ecully, France-based data-integration vendor, is making its debut appearance in the U.S. with version 3.1 of its eponymous ETL server. The Java-based product aims to go a step beyond traditional extract-transform-load (ETL) utilities by providing a wide variety of connectors for databases and enterprise applications, as well as for custom-written apps.

Sunopsis 3.1 was due to be released on May 5.

Yves de Montcheuil, director of product marketing, said that more than 230 customers are using Sunopsis in Europe, although some also are using the product in the U.S., and are supported out of the Beverly, Mass., office (www.sunopsis.com), which opened in 2002.

The goal, said de Montcheuil, is to allow companies to share and manage data from disparate sources—without the complexity of traditional ETL and EAI solutions. "The ETL approach is to manipulate some data, extract it and load it in a batch mode. You're only going to read from production applications, as sources, and write typically to a data warehouse. The challenge is to integrate a real-time dimension to track changes to the data and propagate it to multiple applications."

Another problem, he said, is that ETL solutions were designed for data warehousing, and rarely had the capability to write data directly back to production applications.

Sunopsis includes a graphical tool for designing extract and transformation operations.

On the other side of the coin, he said, EAI-type tools can read and write production applications in real time—but because they don't go to the databases directly, they suffer from slow throughput. "If you only want to move a few records per second, and don't mind using proprietary connectors or Web services, that's fine. But if you want to handle tens of thousands of records per minute, you're reaching the limit of the EAI architecture." EAI also falls short, he said, when it comes to performing complex data transformations.

By contrast, Sunopsis is an ETL application that can run within a J2EE app server, and which both reads and writes to multiple enterprise apps, de Montcheuil said. New with version 3.1, Sunopsis also can handle real-time data synchronization. "It bridges the ETL and EAI markets. It manipulates the data using traditional functions, and it works both batch and real-time mode."

The real-time approach is handled by a built-in message-oriented middleware layer, called Sunopsis MQ, and an engine that can automatically detect data changes, he said.

The read/write connectors work with Oracle Applications, SAP R/3 and other packaged applications, as well as with relational databases. To improve throughput, de Montcheuil said, the transformation engine orchestrates the work of the database engines.

Pricing is based on developer seats, with unlimited connectivity to sources and targets with a single license. Sunopsis is priced at US$49,950 for the first two developers, and then $14,000 for additional seats. ■

WEB-BASED DEFECT TRACKING IS ELEMENTOOL

BY DAVID RUBINSTEIN

Elementool Inc., a 3-year-old New York-based company, has released version 4 of what it calls the first-ever Web-based tracking system for software defects.

By hosting the system on its Web site, according to founder and CEO Yaron Sinai, Elementool (www.elementool.com) can eliminate the upfront costs of purchasing defect-tracking software. "If you have a short project and need the tool for three months, you can use it, pay monthly, and when you're done, you close the account," Sinai said.

Sinai said he noticed that when he was QA manager for a software company in Israel, most organizations tracking defects were using Microsoft Word documents or Excel spreadsheets. There were no Web-based tools, he said.

Elementool is set up by accounts, Sinai said; customers log in to their account and create users, set priorities for repairing bugs, and create tasks for developers. New in version 4.0 is the ability for customers to manage more than one project from a single account. Also new are lower rates for multiple projects and a Quick Reports feature that allows users to save settings for use in multiple reports, Sinai said.

A basic version of Elementool, which allows for the storage of 200 issues, e-mail notification and unlimited users, is free. An advanced edition for 2,000 issues, with no banner ads and advanced reporting capability, costs US$39.99 per month; a professional edition costs $59.99 per month and adds file attachments and a history trail to the feature set. ■

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LogicLibrary Plugs Logidex Into WebSphere

Gains extensibility and leverages full functionality from Studio Application Developer

BY ALAN ZEICHICK

LogicLibrary Inc. on May 13 released an update to its Logidex content repository that significantly changes the extensibility of the product, according to the company.

"Version 2.0 is a major step forward in moving closer and closer to what enterprise customers need and want in an asset metadata library like Logidex," said Brent Carlson, co-founder and vice president of technology. "We feel we have an enterprise-strength product with this version."

Most significant, he said, is a plug-in into IBM's WebSphere Studio Application Developer (WSAD), and a peer plug-in for the Eclipse open-source IDE. "It's not a simple 'I can launch a browser into the IDE' capability that [other vendors] have; we can take advantage of the full palette of functions that the IDE provides. Logidex just becomes a seamless part of a developer's day-to-day environment," he said.

The new version also offers extensibility through what Carlson calls the Anysource SDK. "It's a series of Web services-based APIs that enable easy implementation of automation either for bulk load of assets, or integration with external systems like version-control repositories."

The WSAD plug-in takes advantage of a new set of user-facing SOAP APIs, added Carlson, for searching, retrieving assets and storing projects. "One could use those for other integration, such as integrating into an in-house developer portal." Those APIs also leave the door open for future plug-ins for other commercial IDEs, he said.

The final change, Carlson said, is an open reporting framework, where customers can plug any reporting engine into the environment. "We expose the persistent information that Logidex holds onto through a set of read-only database views, and also provide a presentation-layer framework that lets developers plug the reports back into the Logidex user interface. That makes [the reports] seamlessly accessible."

Logidex 2.0 runs on AIX, Red Hat Linux and Solaris, and uses either DB2 or Oracle9iDB as its repository. Pricing ranges from US$1,000 to $1,500 per seat, said Carlson, plus server pricing. A typical installation for 75 to 100 users costs about $95,000, he said.

The company (www.logiclibrary.com) also has launched a free online asset portal, which kicked off with a collection of core J2EE patterns contributed by Sun Microsystems Inc.

"We will add new content for free on the Asset Center, both to expose people to the idea of a component repository, and to highlight our graphical search for those assets," said Greg Coticchia, LogicLibrary's CEO. The repository is at www.logidexassetcenter.com. ■

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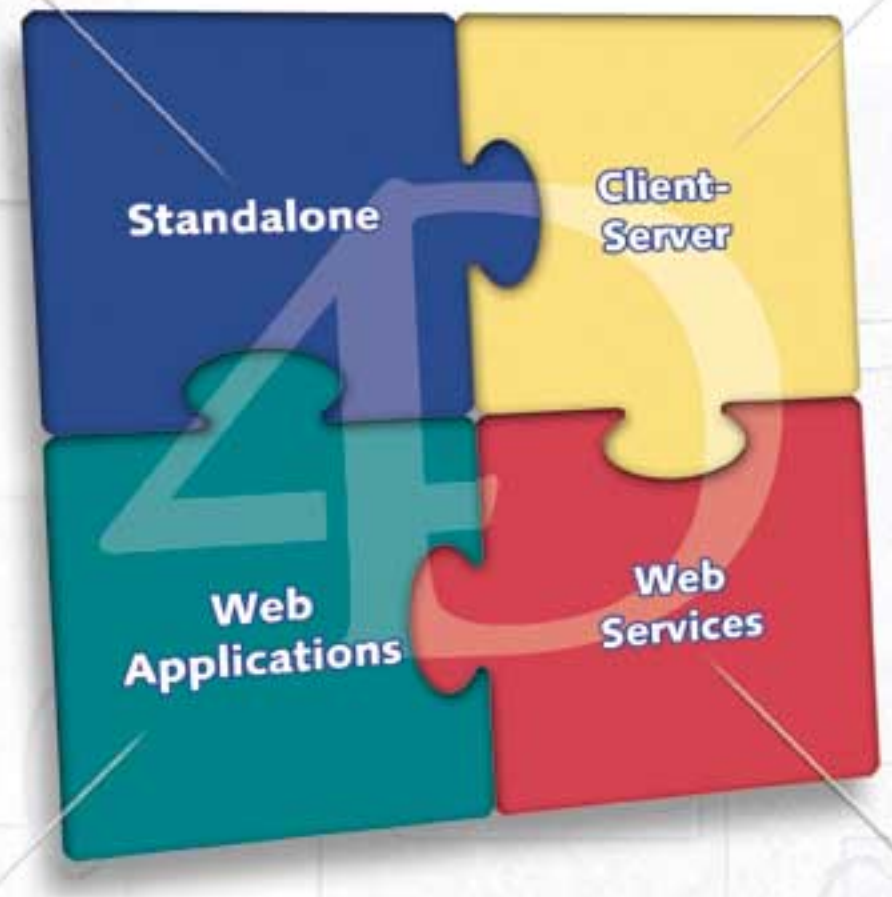

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PIRACY

◂ continued from page 4

ware against the initial description. If too many things vary, the software won't load. The idea behind this scheme was that if a program was licensed for one and only one computer, checking the hardware would ensure it wasn't being loaded onto another.

"The important factor here is, let's make a flexible solution so that the publishers and distributors can say, 'Let's look at our customer base, and what can I lock the software to?'" said Wood. "How many of those fingertips can I change before my fingerprint is changed?"

This could be a problem for customers who frequently upgrade their computers. It also could be a problem when customers get rid of an old system and install their software onto a new one. In both these cases, legitimate customers would be inconvenienced by having to call in to technical support to get a new code to reinstall the software.

Security vendors most want to concern themselves not with these instances of what they call casual copying, but with the more malicious copying that can cost ISVs in lost sales and in having to support customers who didn't buy the product.

"The malicious aspect comes from people putting up cracks, people putting up Microsoft leaks, people trying to hack our products in order to sell pirated versions of programs—that's malicious," said Tom Ybarra, Rainbow's product manager for software security products.

Microsoft again was in the news in this area in April when a customer posted a volume-licensing key for Windows Server 2003 on the Internet. The key sequence is designed to reduce the headaches of installing software at large organizations. These sites can purchase unlimited seat licenses that require the software key but don't check any hardware profiles. Microsoft beta sites say the volume licensing key works with three different versions of Windows Server 2003.

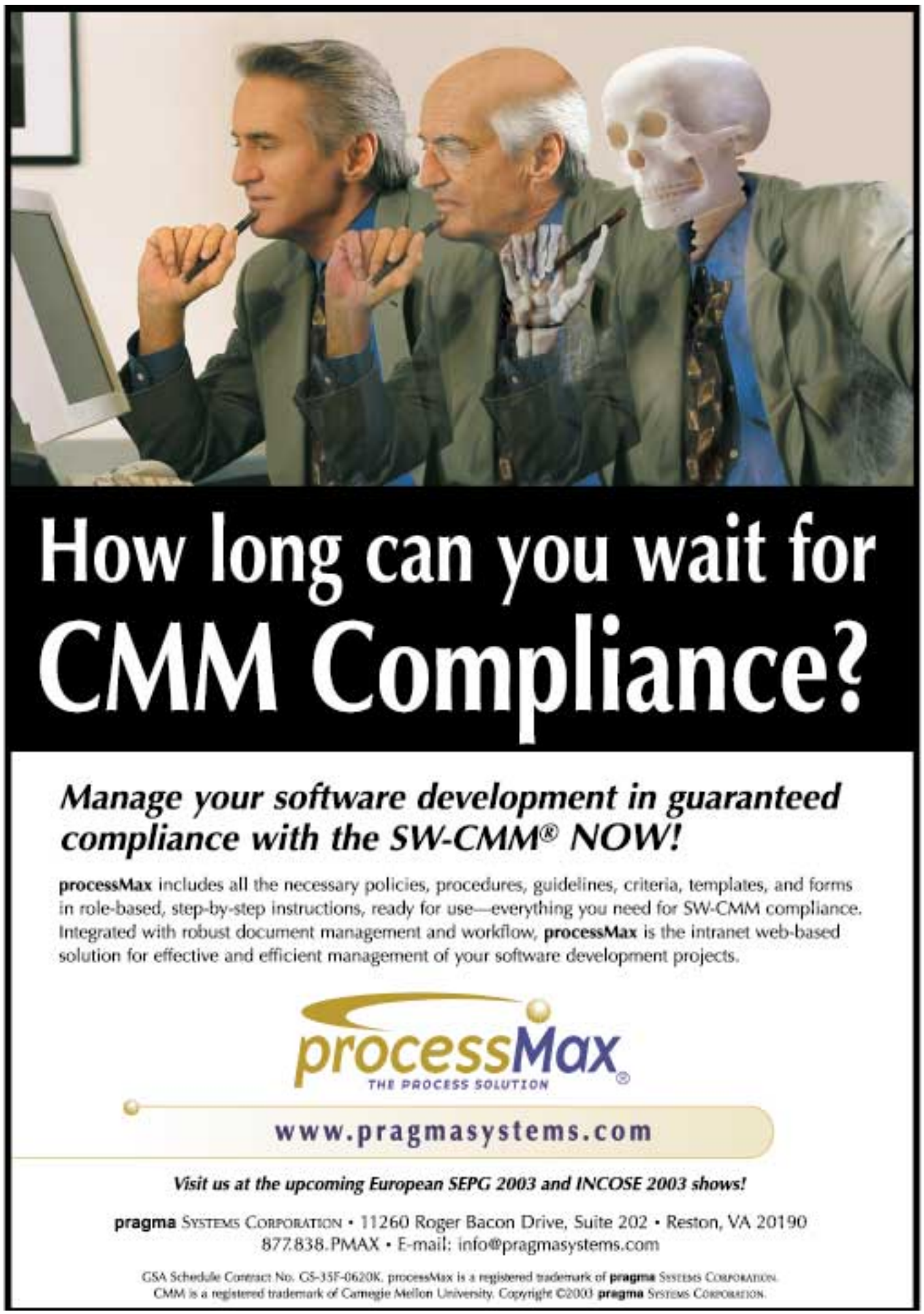
To stay ahead of those who might crack their encryption software or leak codes, anti-piracy vendors are taking the next step: including hardware in their software protection systems. This is similar to having an ATM card to get money from the bank. It's not enough to know the PIN; you must have a card verifying who you are and your right to access the account. Customers installing software not only must type in a key code, but also must have a piece of hardware, usually plugged into the USB port, to install software.

This is not foolproof. For instance, some hardware "dongles" are nothing more than memory with a product code installed. Encrypted or otherwise, that information could easily be mimicked in software.

To get past this, dongle makers are creating more complex dongles that issue a "challenge," or an electronic question that must be answered with a new response each time the device is used. That way, even if the information in memory is copied, it won't be the appropriate response, and the product won't install.

The decision here for developers is determining how much and what kind of anti-piracy protection is appropriate for the kind of software they are distributing.

"So, before you even consider implementing security, you have to go through a cost-value analysis," said Lynch. "For instance, this key costs $48. If your unit price is $100, you're not going to consider that." ■



BORLAND

◂ continued from page 1

cally the same functions and features as Borland's other Windows development tools, according to Borland's Simon Thornhill, such as C++ Builder, JBuilder for Java, and the Object Pascal-based Kylix. The major difference is that C# Builder is purely for .NET, including WinForms, WebForms, ASP.NET and ADO .NET applications. There is no option to compile Win32 binaries, and Borland has no plans to support other platforms, he said.

Thornhill is Borland's vice president and general manager of rapid application development solutions.

Due to the company's licensing of Microsoft's .NET Framework SDK in January, developers will not need to install Visual Studio .NET or download .NET components from the Microsoft Web site. The necessary portions of the Microsoft stack are included with C# Builder, including the Common Language Runtime and Microsoft's C# compiler, which Borland uses in the IDE.

The company also hinted at its next step for Windows, which would be a complete application life-cycle management suite based on the C# language—analogous to its Borland Enterprise Studio for Java, which combines the JBuilder IDE, Together modeling software and Optimizeit performance-management tools.

"We are announcing that we'll introduce the complete application life-cycle management for .NET. At this stage it is a strategy announcement, but at a later stage we will be delivering all the pieces combined together," Thornhill said. "We're not announcing when it will be, but we're announcing the intention that as we have a Java application life-cycle solution, we'll have a .NET life-cycle management solution."

SAY IT WITH .NET

While Thornhill said that "a lot of IT organizations don't want to be locked into any particular platform," such as Java or .NET, he was very definite that C# Builder is a .NET-only product. The company, he said, is unlikely to bring the language to other platforms, such as to Linux, native Win32 or even to compiling for a Java Virtual Machine.

"As C# is a standard, if other vendors make it so that a C# application can run, say, on Linux, that would be fine," said Thornhill. "It really isn't a focus for us—if others want to take it to other places, we're happy to let them, and to support them by being standard-based."

Borland will be releasing four versions of C# Builder, targeting personal and enterprise developers, with prices ranging from US$69 to $2,499, sometime midyear; Thornhill would not be more specific about the timing of the releases. ■

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WS-I Tools Test Against Profile

Reports show if services meet guidelines

BY YVONNE L. LEE

The Web Services Interoperability Organization released in April a pair of testing tools to assess how well applications meet the organization's WS-I Basic Profile.

The two tools, used together, produce a report that indicates whether a Web service meets the guidelines of the WS-I Basic Profile, which specifies information about how Web services define themselves, register themselves in a repository, and communicate back and forth.

The test suites are available in C# and Java implementations, so that they will work with Web services built using either Microsoft's .NET or J2EE.

The Web Service Communication Monitor captures and stores messages exchanged between Web services and the software that invokes them.

The other tool, the Web Service Profile Analyzer, evaluates messages captured by the Web Service Communication Monitor, and validates information left over from the description and registration of the Web services. That information includes Web Services Description Language documents describing the services, and XML schema files describing the data types.

After analyzing the information, the Web Service Profile Analyzer produces a detailed report indicating whether the Web service meets the guidelines of the WS-I Basic Profile. The report indicates specific deviations and failures in the event that the Web service failed to meet the requirements.

Prerelease versions are available now from the organization's Web site (www.ws-i.org). The tools have been designed to allow for expansion to test future profiles.

"The tools are currently feature-complete," said Jacques Durand, chair of the WS-I's test tools working group and director of industry relations at Fujitsu Software Corp. "We are spending time testing the tools themselves."

WS-I is requesting public comment on the tools. Final versions are expected in the third quarter following the final release of the WS-I Basic Profile 1.0. ■

OASIS UBL

◂ continued from page 1

UBL effort, said Ron Schmelzer, senior analyst at ZapThink LLC, a research firm specializing in XML and Web services, is that not only do businesses conduct few transactions across industries, there is also little overlap in the documents used across industries.

"The percentage they have in common is very small," he said. "[The standard] may be good enough to do addresses, but to do anything important in a business, you have to negotiate anyhow."

Bozak acknowledged that incorporating all the different fields used in all the different industries could result in an unwieldy standard. "We're trying to solve 80 percent of the problems with 20 percent markup."

Analysts say that for all its good intentions, the standard for business documents will be settled the same way that societies settle on a language for business communication: by doing what the major economic powers want them to do.

"There is a certain amount of de facto standardization that is happening already," said Daniel Sholler, vice president of technology research at Meta Group Inc. "I call that the Wal-Mart effect. Wal-Mart decides to do something, and every consumer products company adheres to it." The companies that need to do business with one another electronically will use formats specified by the large businesses in their industries, he said.

However, there isn't a business incentive for large companies to change their business documents to formats that happen to be used in other industries where they may not have trading partners, Sholler said, and even large organizations with many trading partners may not need to standardize to a single format. "It's hard for me to imagine that the government's going to come up with a common set of business objects for how they purchase electricity to electrify the fence on the Mexican border, to buy toilet paper for the FBI office in Chicago, and buy the B-1 bomber," he said.

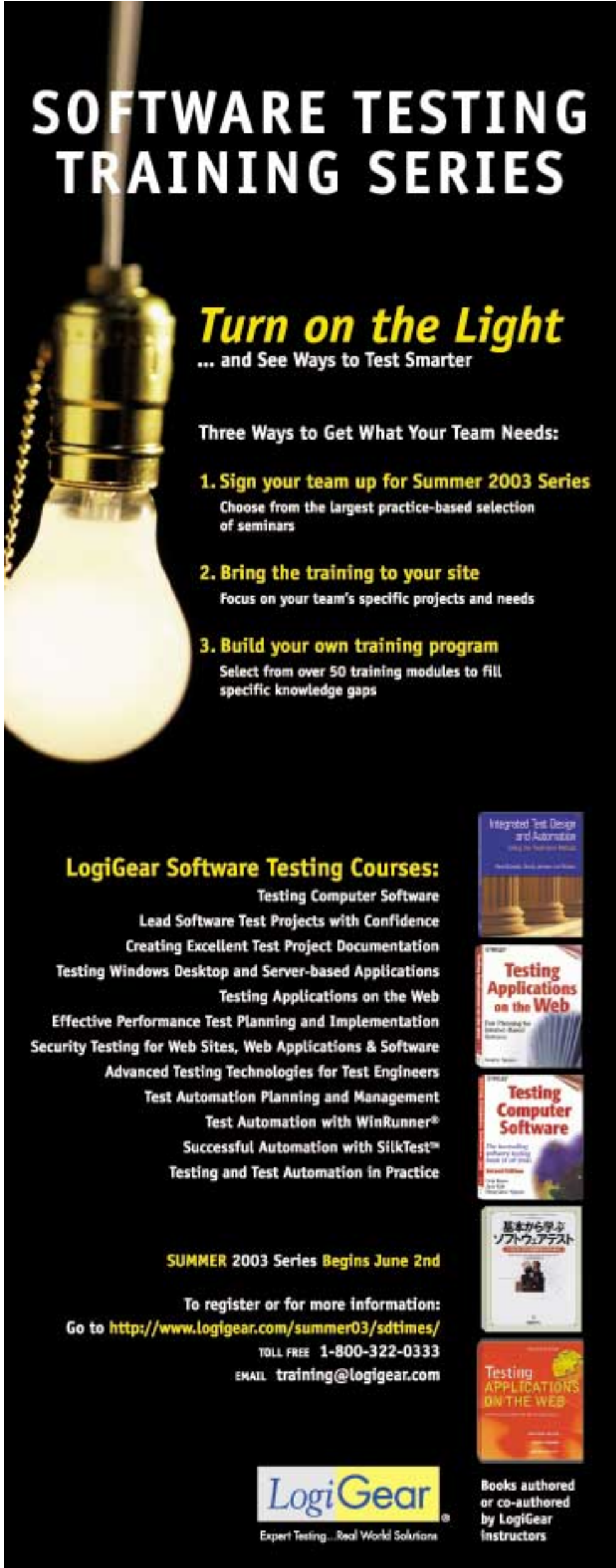
One indication that businesses and customers aren't driving the UBL effort is the absence of computer industry "heavyweights," ZapThink's Schmelzer pointed out. Instead, he said he believes UBL is a Sun-driven effort.

"If there was customer drive, it's hard to see how IBM and Microsoft would not be involved in this," Schmelzer said. The only major technology player besides Sun involved in the effort is Hewlett-Packard, which has a single representative. "If Jon Bozak was not driving this, it's hard to see how even Sun would be behind this," he added.

Both Schmelzer and Meta Group's Sholler said they believed that if the UBL effort did not succeed, cross-industry specifications would come about organically.

The UBL committee has liaisons with the insurance, retail sales, electronics, health care, convenience stores, banking, utilities, optical supplies, information technology and accounting industries.

The updated draft version of UBL finished review in April. Version 1.0, expected in May, will incorporate comments from that review. ■



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Voice Enablement Closer to Science Fact

Kits coming to market permit application control with just a few words

BY EDWARD J. CORREIA

Meet George Jetson. In his futuristic cartoon world, devices are activated and controlled only by spoken commands. Fantasy? Perhaps today, but recent announcements from a pair of companies may bring that vision closer to reality far sooner than anyone thought.

Sensory Inc., which manufactures embedded speech microcontrollers for all manner of electronic devices, in late April unveiled Voice Direct II Speech Recognition Kit, a sub-US$50 development kit that it claims permits developers to add voice-recognition capabilities to any electronic device, including appliances, set-top boxes, remote controls, cars and Internet devices, enabling them to be controlled with just a few voice commands.

The hardware and software kit is built around Sensory's Voice Extreme speech-recognition processor, which constantly listens for one, two or three key "trigger words" or phrases to be spoken. These words reportedly activate the speech recognizer, which listens for as many as 15 additional words or phrases, called command words, which then link to a physical interface to operate peripherals. The device's recognition system is set up to know the voice of its trainer, or up to three people, and therefore is language-independent.

Earlier in the month, the company (www.sensoryinc.com) updated several of its other development tools and introduced Text-to-Speaker-Independent Recognition (T2SI), a new technology that it claims permits speech recognition that is independent of the person speaking, and simplifies download of recognized-word files onto embedded firmware.

Also improved, according to the company, are Sensory Speech 7, the development environment for the company's flagship RSC-4x circuit, which now includes better noise filtering; and Quick Synthesis 4.1, its low-bitrate compression utility that now includes a simplified interface. Both tools are free to RSC-4x customers.

LETS APPS BEVOCAL

For developers hesitant or lacking the resources to set up the voice server required to voice-enable apps and Web services, BeVocal Inc. has one solution. The company, which develops and markets carrier-grade call automation systems, in late April introduced Hosting Lite, a self-provisioned telephony hosting service that developers can use to develop, test and deploy small-scale VoiceXML-based services ranging from call-center automation to outbound alerts and online-reservation and purchasing systems.

For a starting price of US$500 per month, developers receive access to BeVocal's Web-based development environment (http://cafe.bevocal.com), a URL and a toll-free number to link inbound or outbound callers with their applications. The monthly fee includes 3,000 minutes per month for as many as five simultaneous callers. Monthly plans scale up to $4,250 per month for 45,000 minutes and 15 simultaneous callers. The site includes grammar and prompt libraries and other tools to help developers build, debug and deploy VoiceXML 2.0-compliant applications.

According to Kevin Stone, senior director of products at BeVocal, the service fills a need for companies looking to test and deploy voice apps for minimum cost. "Hosting Lite gives developers a way to test, showcase and launch applications without any cost or long-term commitments," he said in statement. Once the business case has been demonstrated, developers can elect to upgrade to BeVocal's Foundation VoiceXML Hosting Service, which offers guaranteed capacity, support and service. ▮

Microsoft: CE .NET 4.2 Solves Compatibility Issues

API extensions help application portability without recompiling

BY EDWARD J. CORREIA

SAN FRANCISCO — When Microsoft Corp. releases Windows CE .NET 4.2 sometime in the next few months, the need to recompile applications before targeting different versions of embedded Windows will be a thing of the past. That's the claim the company made at the Embedded Systems Conference here in late April about its latest embedded operating system, which also reportedly will include enhancements to networking, Bluetooth, browsing and multimedia. The company has released the new version to manufacturing, but has not yet set a date for general availability.

Jeana Jorgensen, a product manager in Microsoft's Embedded and Appliance Platforms group, acknowledged that prior to version 4.2, there were compatibility issues between the current and older versions of the company's embedded operating systems. "There was no compatibility between Windows CE 4.0 and 4.1, and Pocket PC. And applications built for Pocket PC or Windows CE 4.0 wouldn't run properly on Windows CE .NET."

Those incompatibility problems have been solved, she said, thanks to AYGShell API extensions, an API set that developers can now include with an operating-system image. "This pulls in APIs that are standard across all devices. Beginning with Windows CE .NET 4.2, [developers] can write an application for CE and run it on Pocket PC without the need to be modified or recompiled," provided the processors on both machines are identical and that the apps both call identical sets of APIs. The change applies only to native applications, not managed apps running inside Microsoft's CLI runtime.

Jorgensen said version 4.2 also beefs up multimedia capabilities and performance, including an implementation of Windows Media Player 9, which she claimed delivers faster, better rendering and media streaming. Pocket Internet Explorer is now compliant with the IPv6 specification. Also enhanced are Bluetooth capabilities, with the addition of Bluetooth network and modem gateway features, Bluetooth keyboard and mouse input, and integration with the Cambridge Silicon Radio (CSR) Bluetooth chip set.

Windows CE .NET also now can act as a firewall, file or print server and includes a Layer 2 Tunneling Protocol/IPSec stack plus sample code to aid development of other services, including boot-time start, remote administration, X10 controller, network time server, Internet-based network bridge, and a service for acting as a simple picture server.

Formerly code-named "McKendrick," Windows CE .NET 4.2 will be the first to include a release version of its Compact Framework runtime environment; participants in Microsoft's Premium Source program will be permitted to make changes to the source code and distribute those changes within their products. Pricing was not disclosed. ▮

TARARI AIMS TO SPEED XML PROCESSING

BY YVONNE L. LEE

Intel spin-off Tarari Inc. announced at Networld+ Interop in Las Vegas late last month a board that it says makes XML and Web services applications run more efficiently, taking over the more taxing portions of the application and running them on a separate co-processor.

Tarari markets several specialized coprocessor boards that it claims accelerate throughput.

The idea of the board, which the company calls an XML content processor, is similar to that of a graphics co-processor, except for XML content. "We're trying to offload the heavy-duty algorithms from their applications," said Dave Finlay, Tarari's vice president of marketing and sales.

The board plugs into servers and network appliances. It accelerates such functions as parsing and cryptography, which are done repeatedly and require a great deal of processing.

Tarari also provides libraries and interfaces to integrate the board into Web services applications. That way, Finlay said, customers could concentrate on optimizing the design of their applications, rather than optimizing the performance of some of these core XML functions.

Organizations, hosting companies, hardware manufacturers and systems integrators could sell services that use the XML Content Processor or could bundle it with some other hardware system.

Such services won't be cheap, however. Tarari quotes pricing for the board at US$3,064 each in quantities of 1,000.

The San Diego-based company (www.tarari.com) also began shipping an anti-virus coprocessor at the late April show and has been shipping a general-purpose "content processor" since December.

In addition to the new boards, Tarari introduced a new version of its software developer kit. Version 2.2 offers new drivers and supports parallel processing.

The company says it has future plans to offer Web services and network security processors.

The Tarari XML Content Processor is scheduled to ship in June. ▮

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Eternal Springs Hope For High-Availability Apps

BY EDWARD J. CORREIA

SAN FRANCISCO—The pinnacle of high availability is 99.999 percent uptime, the equivalent of about five minutes of downtime per year. Eternal Systems Inc. claims to have achieved this "five-nines" reliability with Duration, a set of components and an API introduced at the Embedded Systems Conference here last month that it says can be added to existing applications with as little as one line of new code.

Bob Monkman, director of marketing at Eternal (www.eternal-systems.com), said Duration is unlike other solutions that claim five-nines availability, because those solutions require manual programming techniques. "This focuses on a need that hasn't been addressed in embedded," Monkman claimed. "The state of the art right now is to mix a lot of logic in your application to save off data structures, data tables and stacks. [But] manual approaches to keep a working state and go back to a known good point at failure" are difficult to carry out, he said, particularly with object-oriented programming.

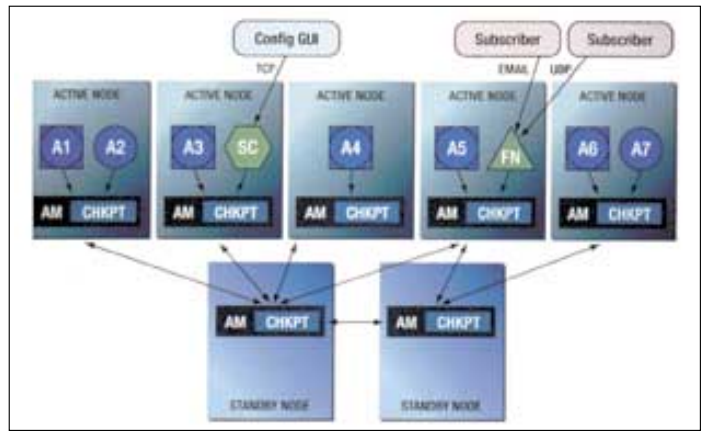
Duration, Monkman said, employs an automated checkpoint engine that can be largely transparent to developers. "The engine sits between the OS and the application and periodically takes a snapshot of all the registers, data segments and the stack, and saves them to a designated remote failover location. Applications register [with the checkpoint engine] with as little as one line of code." Checkpoint periods are specified by the developer, as are failover procedures, which might include restart from checkpoints, and failover to an alternate node.

Set for release in July, Duration initially will be targeted at communications infrastructure equipment, but Monkman said the system also will have broad enterprise applicability. "One of the biggest markets for something like this is for financial transactions," he said, which deploy order-processing systems with multiphase commit capabilities, in which processes must succeed or fail as a group. "In those environments, it's possible to get out of sync if a failure occurs at the wrong time."

Monkman said the software can run as a stand-alone development environment or integrate with existing tools. "Through a graphical tool, you go in and identify which apps you want to protect, where they run, where they fail over, and how often to checkpoint them. Then the application [is recompiled and] links with our library." The enterprise version will work through dynamic library links, and will not require a recompilation of code, Monkman said.

Duration is set for general availability in July, and will be priced at US$35,000 for a three-developer pack. Runtime royalties also will apply; Monkman would not provide the cost.

Monkman claimed the software is compatible with any operating system that offers protected memory, including Linux, Unix, LynuxWorks' LynxOS and Green Hills' Integrity; device footprint can vary between a few hundred kilobytes and several megabytes, he added, and depends on how many applications are protected. ■



Duration's automated checkpoint engine monitors the application state.

PowerBuilder to Target Windows CE

BY EDWARD J. CORREIA

Developers using PowerBuilder, Sybase Inc.'s 4GL rapid development environment, will soon be able to target mobile devices. That's the word from Sybase, which in mid-April released to limited beta Pocket PowerBuilder, a version that targets Windows CE; an open beta is scheduled for this month with general availability set by September.

Among the reported capabilities that will make the transition from desktop to the mobile version will be the DataWindow, which provides a scriptable framework for dynamic presentation of content, including database and HTML data. According to the company, developers also can expect tight integration with SQL Anywhere Studio, the mobile database and enterprise synchronization development environment developed and marketed by Sybase subsidiary iAnywhere Solutions.

Developers can register and download the Pocket PowerBuilder beta for Windows at www.sybase.com/pocketpb. The environment can be used to target Windows CE 3.*x*, 4.*x*, Pocket PC and Pocket PC Phone Edition; additional mobile operating systems will be targeted in the future, but the company refused to specify which will be first. ■

ESC REPORT

◂ continued from page 1

The company (www.lynuxworks.com) also updated VisualLynux 5.0, its add-on to Visual Studio that permits apps built with the Microsoft environment to execute unchanged on the company's LynxOS RTOS and BlueCat Linux distributions. The new version now works with Visual Studio .NET and Visual C++ .NET. The company also unveiled Lynx Certifiable Stack, a TCP/IP stack that it says is secure enough to be certified under the Federal Aviation Administration's DO-178B Level A requirement for security-critical environments, considered the de facto standard for new aviation software.

Green Hills Software Inc. has introduced Run-Mode JTAG Debug, a tool that when used in conjunction with its Multi debugging software, and Probe and Slingshot hardware, permits developers to analyze tasks running on the ThreadX RTOS without stopping the application. The company (www.ghs.com) also began offering royalty-free licensing of IPNET and IPLITE, two IPv6 stacks built by embedded security software developer Interpeak AB.

Motorola Inc. has dropped the price of its CodeWarrior for DSP56800 development environment from US$1,195. For applications up to 16KB, it is free; for larger apps the cost is $495. The offer ends in August. According to Paul Grimme, corporate vice president and general manager of Motorola's semiconductor products sector, typical devices using this processor include medical scanners, remote monitoring devices, cable test equipment and what he referred to as "white goods," which he said cover washing machines and other large appliances.

Motorola's 56F800 demo board gives developers a real-world testbed for software deployment.

Longer term, the company (www.motorola.com) will sell its 56F800 flash-based demo board, which Grimme said is a next step beyond software simulation, for $49. The board formerly sold as part of a complete development kit for $1,500.

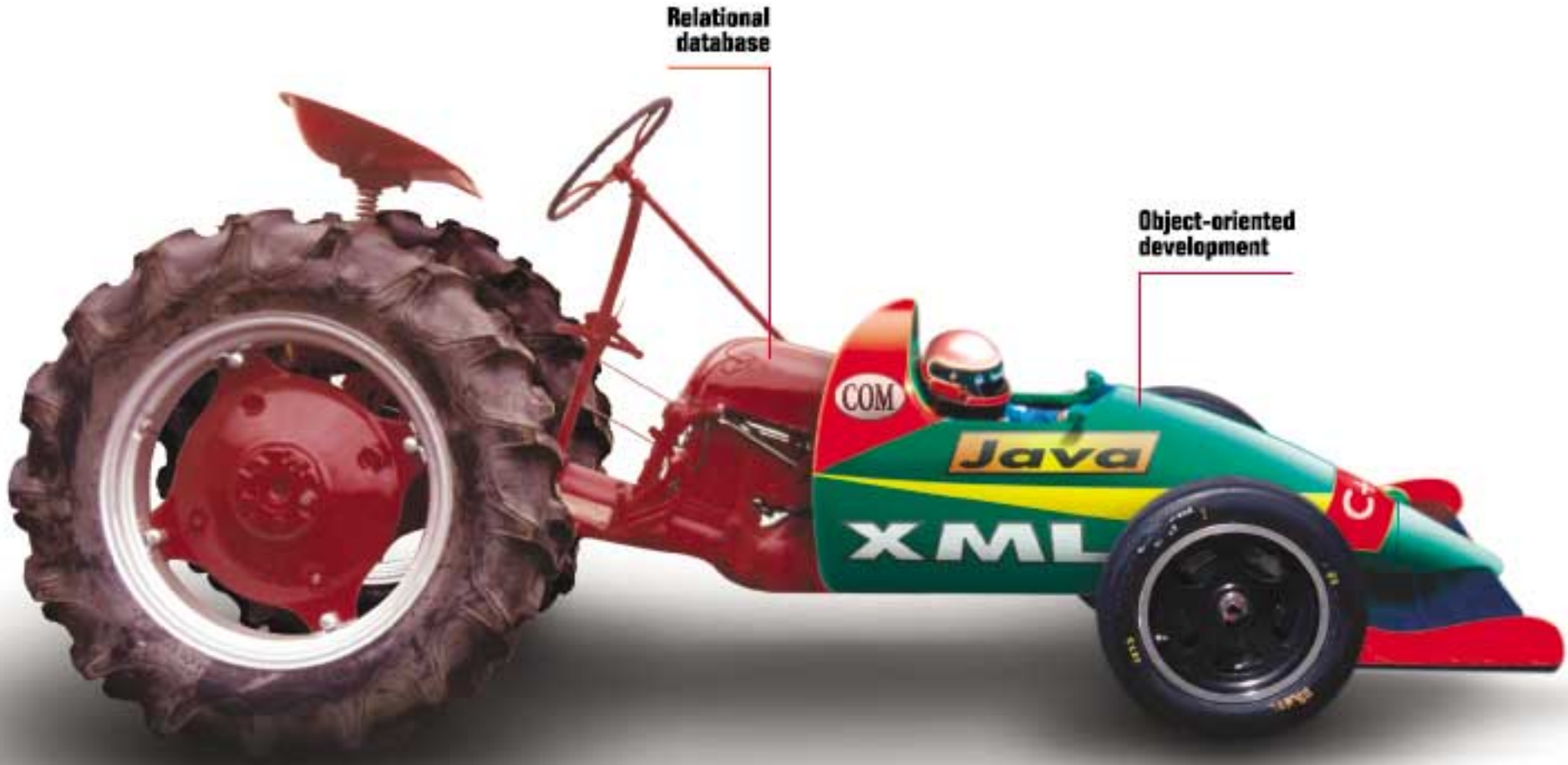
Embedded software developer **EBSnet Inc.** has released RT-SMB Server, an implementation of the Server Message Block protocol for embedded devices. SMB is the protocol used by Microsoft Windows and has been implemented as open-source under the Samba project. "It's an easy way to connect with a Windows PC to print to your embedded device or to upload or download files," said Shane Titus, lead software engineer at EBSnet.

Tony Astolfi, a senior software engineer with the company (www.ebsnetinc.com), said the stack also simplifies access to data on embedded devices from Linux and Unix applications running on remote machines also running SMB.

"On a box running Samba, it creates a transparent connection. To that machine, there's no difference between files on an embedded device and those in a local file system," he said. Royalty-free pricing starts at US$7,000 including ASCI-C source code, and varies by project. The stack reportedly occupies about 150KB of device memory, is available for Linux, Unix and Windows, and is not dependent on EBSnet's own TCP/IP stack.

One notable bit of hardware news was from **Mentor Graphics Corp.**, which added to its iSolve line with the IP-Xress Target Platform, a processor verification device that works through a JTAG interface with its VStation and Celearo emulators to verify fixed-IP designs, such as those in microprocessors and DSPs. "The direct connection of fixed IP means that [developers] can execute application software, controlled through standard software debug tools, while full visibility of the ASIC or SoC is available from the emulator," said Jean-Francois Kah, product marketing director. Initially, the unit will work with the ARM926EJ-S, ARM946E-S and ARM966E-S cores; a range of circuits from ARM, IBM and Texas Instruments are planned for the future.

The company (www.mentor.com) also unveiled a number of enhancements to Nucleus, its embedded operating system, including implementations of an SNMPv3 stack for simple, secure network device management, an IPv6 stack, USB host and device capabilities, and an extension of the Nucleus kernel to include OSEK COM 3, an implementation of the uniform communication environment for automotive control unit application software. OSEK (www.osek.org) stands for "open systems and the corresponding interfaces for automotive electronics." ■



If your back-end database isn't a good match for your front-end development, you need a new database. Caché, the post-relational database from InterSystems, is a powerful fusion of today's mainstream technologies: objects and SQL.

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Free Connection Can Be Costly

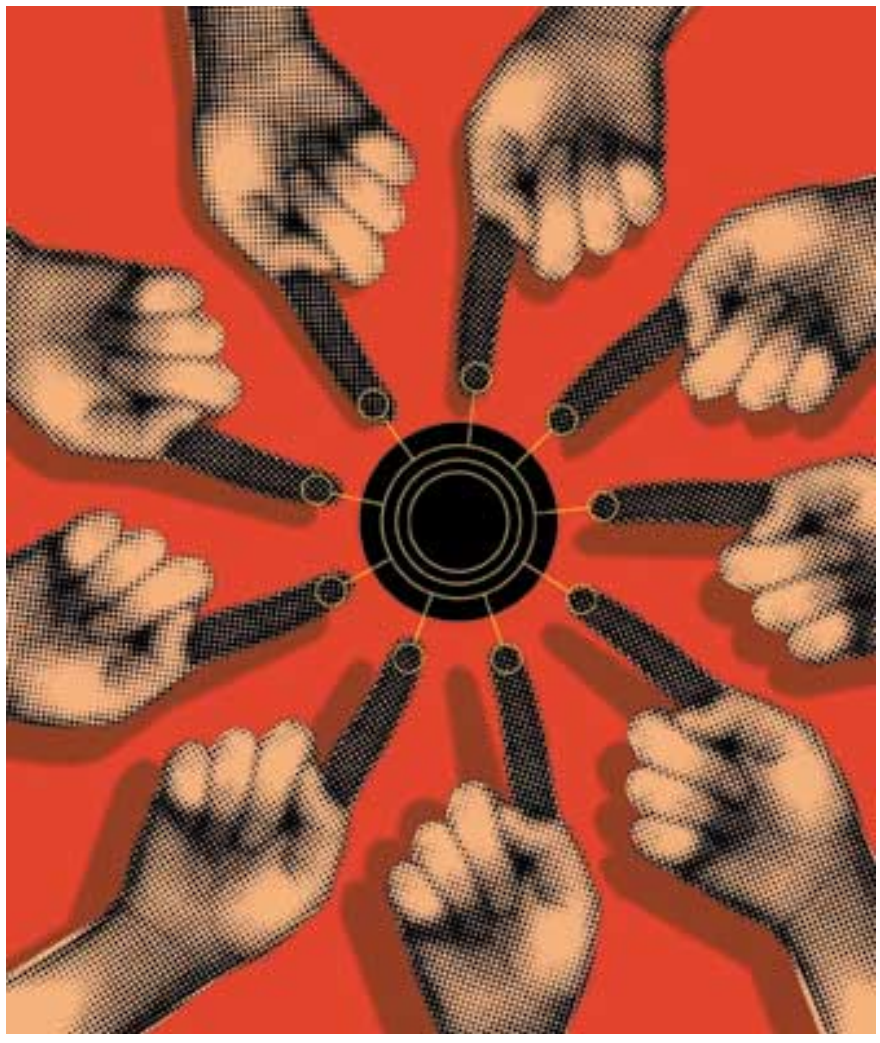
Vendors of ODBC, JDBC or .NET drivers offer improved performance, functionality over built-ins

BY ESTHER SCHINDLER

It's hard to justify spending money on functionality when the supplier has already provided it, even if the paid-for version is just somehow better. And that's true whether you're speaking of a car stereo, database connector or a word processor's thesaurus. The difference is magnified when the paid-for version isn't just better...it's a *lot* better.

Every database includes tools to connect to other databases: .NET data providers, ODBC drivers or JDBC drivers. Whether the database is a desktop tool such as Microsoft's Access or an enterprise-level version of Oracle, each enables developers to link together and manipulate data inside non-native or remote databases, using database application design tools or programming function calls.

While the quality of those included connectors may vary, there's a thriving market in premium connectors and adapters. What do they promise that makes it worthwhile for you to spend money—ranging from hundreds to tens of thousands of dollars per server—for something you already have? "There are no free lunches," said Kingsley Idehen, president and CEO of OpenLink Software Inc. (www.openlinksw.com), one of the players in that field.



MORE FOR THE BUCK

The easiest justification for purchasing a third-party database driver is to gain functionality that's absent in the free tools. That isn't necessarily hard to accomplish, since database vendors often provide ODBC and JDBC connectivity as a check box in a feature chart. In contrast, the third-party vendors can claim it's all they do, so they put more energy into their features, performance and product support.

In some cases, the capabilities offered by third-party vendors are simply unavailable in the built-in tools. For example, Proposion Inc. (www.proposion.com) sells Proposion N2N, a tool to integrate IBM Lotus Notes and IBM Lotus Domino into Microsoft's .NET Framework and Visual Studio .NET development tools. Proposion N2N enables Domino developers to leverage .NET data connection facilities along with Notes/Domino features such as agents, encryption and attachments—without having to run Microsoft's IIS.

More frequently, the third-party drivers offer greater feature depth or they eliminate limitations set in place by the built-in drivers and connectors.

For instance, Hit Software Inc. (www.hitsw.com) sells integration tools that work with IBM's iSeries and AS/400s. Hit's OLEDB/400 supports IRowsetLocate and ITransactionJoin interfaces, according to the company, but IBM's OLEDB for iSeries does not.

As another example, IDS Software's (www.idssoftware.com) .NET Data Provider claims to solve a limitation in .NET applications: If the database is on a different computer, linked to the .NET server only by the Internet, desktop databases aren't able to connect using ODBC or OLEDB.

And, NetDirect Inc.'s (www.j-netdirect.com) JSQLConnect pools prepared statements both within and across logical connections; Microsoft's driver does not directly reuse prepared statement handles.

These capabilities can extend beyond technical features. Because the licensing terms on the free drivers generally preclude you from redistributing them, some development shops are interested in third-party tools to include with their products. NetDirect is among the companies providing OEM licensing, although the distribution issue isn't important only to independent software vendors. "You don't need the user to download a driver, and you can control which versions they use," explained NetDirect president David Murphy.

A common enhancement among the add-ons is the ability to connect to disparate or older database versions unsupported by the free drivers. Among them is DataDirect Technologies Inc.'s (www.datadirect-technologies.com) JDBC driver, which supports both SQL Server 7 and SQL Server 2000 running on any Windows server (including Windows NT).

In contrast, said John Goodson, DataDirect's vice president of product operations, the Microsoft JDBC driver doesn't support SQL Server 2000 running on Windows NT servers. And Hit's Ritmo for DB2, a .NET data provider, translates SQL commands accepted via ADO.NET into native DB2 SQL.

ZOOM-ZOOM PERFORMANCE

For many database developers, the time to look for an outside solution is when their applications need a performance boost. Most database vendors claim that their drivers are faster than the ones included with the software—anywhere from 10 percent faster to twice the speed—though, naturally, the results can vary widely depending on the hardware, software, applications and usage models.

DataDirect's JDBC driver supports SQL Server even on Windows NT, says Goodson.

A 10 percent increase may not sound like much on paper, but according to Martin Smith, vice president of sales and marketing for Hit, that's a meaningful improvement to most customers.

NetDirect's Murphy pointed out that, in most cases, the built-in drivers work fine—up to a point. "They're OK for up to 200 concurrent users, but then database access slows down." While it's possible for in-house staff to optimize the use of built-in tools and to create workarounds, Murphy said, "it's not worth it. Once you've spent a day trying to solve the problem, you've basically spent the money [that our product would cost]."

Some of the products address performance with specific features, beyond "simply" making access faster. EasySoft Ltd.'s (www.easysoft.com) Enterprise ODBC Bridge provides additional usage statistics, such as average connections per minute and connections per data source, as well as a graph of connection history.

'HOLDING THEIR NOSES'

A big issue among the third-party vendors is offering tools that are truly compliant with the JDBC and other technology specifications.

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FREE CONNECTION

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The database vendors have to create drivers that align with the industry expectations. But inherently, they also want to offer features that add value to their products' feature sets, or (if you're cynical) lock you into their proprietary system. DataDirect's vice president of product management, Evan McDonnell, said, "They offer standards-based interfaces—but they do it holding their noses."

Free DB vendors skimp on compliance testing, claims DataDirect's McDonnell.

As a result, several of the third-party driver vendors stress their suitability for people who want to target multiple databases, claiming that their drivers will work with all databases with no code changes.

Then there's the issue of support for the latest JDBC technology specifications. McDonnell claims that the free database vendors skimp on testing. Although Sun's JDBC test suite has 6,000 JDBC tests, he said, most of the free drivers fail nearly 10 percent of the J2EE compliance tests.

Michael Chen, president of IDS said, "Our JDBC solution is Type 3, which is the combination of IDS Server [server-side] and IDS JDBC Driver [client-side]." All major database makers now offer a Type 4 JDBC driver for their own databases. Also, all versions of JDK and JRE come with the free but infamous JDBC-ODBC Bridge, which Chen considers "a transitional solution."

Actually, to quote from Sun's own documentation, "Sun Microsystems and DataDirect Technologies are working to make the Bridge more reliable and robust, but they do not consider it a supported product. With the development of pure Java JDBC drivers, the JDBC-ODBC Bridge should become unnecessary."

SECURITY

According to some vendors, the free native drivers are inherently insecure, because they enable any ODBC-compliant application to get at the company's data.

According to OpenLink's Idehen,

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BUZZWORD BINGO

Whichever technology you choose, the different specifications for database connectivity share the same goal: to enable applications to work independently of the back-end database engine chosen. The drivers aren't standards, per se, because they aren't endorsed by an industry standards body, but they're certainly standard in the sense of ubiquity.

Each driver is specific to a particular DBMS, and exposes the capabilities of the underlying DBMS to the application. If you want your application to interact with DB2 using ODBC, you'll need a DB2 ODBC driver or dynamic link library. Drivers are available both as APIs and as application-specific tools, so your spreadsheets can look up information from a SQL database.

ODBC (Open DataBase Connectivity) is most closely associated with Windows operating systems, and in fact it started out as the Windows implementation of the X/Open SQL Call Level Interface specification in 1992. Although ODBC is considered a Windows-centric interface, ODBC drivers are available for several other platforms. Among them is the open-source platform-independent implementation of both the ODBC and X/Open specifications, known as Independent Open DataBase Connectivity (iODBC).

A data provider in the .NET Framework serves as a bridge between an application and a data source. A data provider is used to retrieve data from a data source and to reconcile changes to that data back to the data source. The .NET Framework includes SQL Server and OLE DB.NET data providers; it also supports ODBC as a separate download.

JDBC is a little more complicated, because there are several versions. Like the other interfaces, JDBC enables developers to connect with a database or tabular data source, send SQL statements and process the results. It's included in both J2SE and J2EE, with four types available.

Type 1 is Sun's JDBC-ODBC Bridge, a JDBC driver that implements JDBC operations by translating them into ODBC operations. To ODBC it appears as a normal application program. The bridge implements JDBC for any database for which an ODBC driver is available. Type 2 is a partial Java driver, which converts the developer's JDBC API calls into calls to the client machine's specific database. It needs the database vendor's JDBC driver loaded on each client machine, however. These two are used primarily by application developers.

More attention is given to Type 3 and Type 4 JDBC drivers right now, partially because they don't require client JDBC drivers to be installed. The former is a pure Java middleware solution. Type 4 JDBC uses a direct-to-database pure Java driver that converts JDBC calls into network packets used by the proprietary format of the database.

–Esther Schindler

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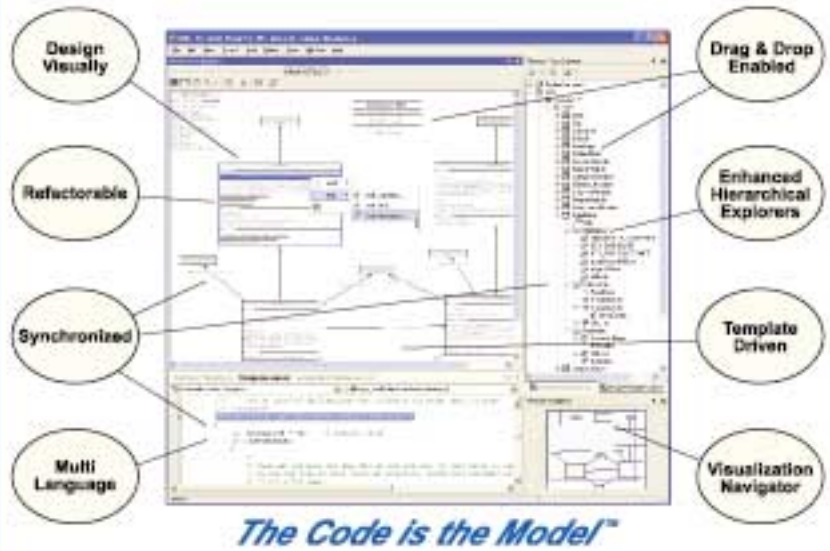

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FREE CONNECTION

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"When you add the Web and Internet to the mix, the vulnerabilities only increase."

A security and load issue doesn't have to be external or malicious. Imagine an information worker in the sales department using Excel or a report writer to connect to the back-end database. What's the impact on the LAN if his query generates millions of answers?

OpenLink's Virtuoso 3.0 (the latest edition of the cross-platform virtual database for SQL, XML and Web services) supplies a rulebook to establish how the enterprise will use ODBC and to create an environment that protects the data's integrity.

For example, access from outside the firewall can be set to read-only. Or you can limit the number of records retrieved, depending on whether they have specific IT department approval, or whether the retrieval was inside or outside the firewall. (Databases don't care about networks or IP addresses, said Idehen; they look only at the user ID and password.) These limitations can be role-based, so that if you're using the HR application, it's all right to update or delete records, but you can't do so from a spreadsheet.

OpenLink is not the only vendor with security features. EasySoft's software enables you to secure data sources by attaching an access control list, defining exactly which users and clients may use each database.

The Internet adds complexity. Many developers create standalone or applet-based Java solutions that can be downloaded and run by clients across the Internet. IDS' Chen said, "If these types of applications need to use JDBC to talk to databases, using Type 4 drivers poses a serious security risk because the database server must be exposed to the Internet. Most sane database administrators aren't willing to do that, because the database server will be under direct attack from hackers. Most Type 4 drivers offer no encryption capability, or such capability is unfeasible for deploying these kinds of Java applications." Chen claimed his company's IDS Server and IDS JDBC Driver offer remedies.

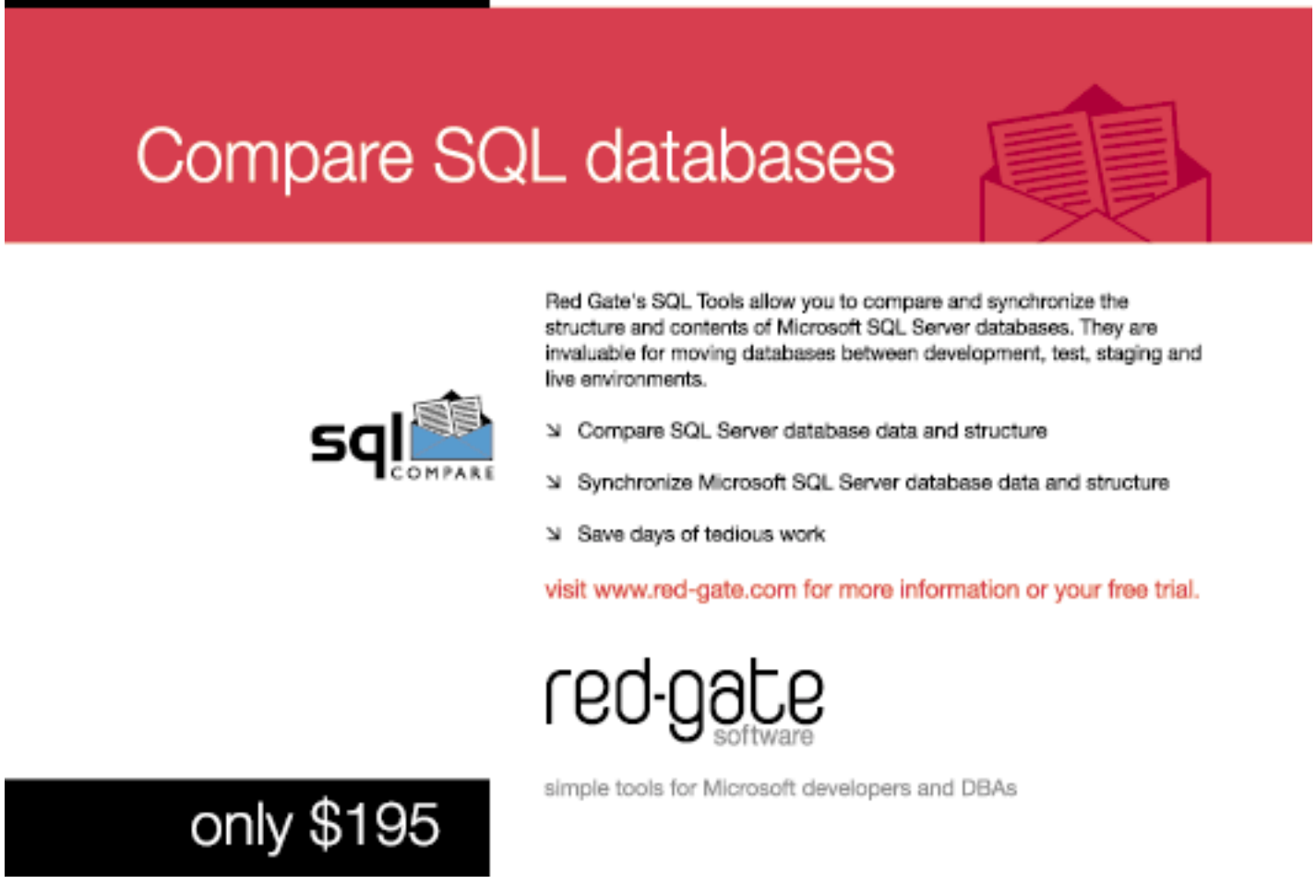
SIGNING ON THE BOTTOM LINE

Perhaps your concern isn't the technology benefits offered by these tools. It's the fear of finger-pointing that can result when too many vendors and technologies are added to the product mix. Even if the free drivers are merely adequate, you reason, at least they'll be supported by the database vendor.

That's not how the third-party vendors see it. They point out that getting timely technical support for drivers is a slow and indirect process, especially since most nonpremium support is via Web or e-mail correspondence only. And they're willing to intercede with the database vendor in case of finger-pointing, but it's almost never necessary to do so. "We provide diagnostic utilities to see where a breakdown occurs. That's typically enough for a database vendor to comprehend," said OpenLink's Idehen.

The vendors also stress the ease of installation. As Hit's Smith pointed out, "A person working on a project doesn't want to break stride; it's important to get up and running immediately."

You may not need a third-party database driver, at least while you're developing the application and putting it through its pilot phase. "Most people aren't aware of the implications until they get to roll out," said Idehen. "They come to us when they exit pilot." ■



EDITORIALS

C# Beyond Microsoft

In the War of the Language Standards, Microsoft's C# has beaten the pants off of Sun's Java. But it may be a Pyrrhic victory.

Sun, you may recall, chose not to submit Java to an independent standards body, preferring to keep tight control over the language specifications. By contrast, Microsoft submitted its C# language (and a small portion of the .NET infrastructure) to ECMA, a European vendor consortium, and from there, to the International Organization for Standardization, which fast-tracked the language to approval as ISO/IEC standard number 23270 earlier this year.

So, C# is a de jure standard, and Java is not. While that may benefit Microsoft when it comes to bidding for major government contracts, the fact is that C# remains bound to .NET. Even Borland, with its new C# Builder development environment, isn't taking the C# language to other platforms—or even to native Win32 code. In fact, Microsoft's own C# compiler for .NET is an integral part of C# Builder. So, what's the point of standardization? It doesn't truly give the customer more choices, or more investment protection.

So, yes, C# may evolve as the best language for building .NET applications, and the ISO standardization will certainly give Microsoft bragging rights.

By contrast, Java is a de facto standard with broad industry support—and isn't tied to any specific platform. Although Java lacks that important ISO/IEC imprimatur, it's more akin to languages like C/C++, COBOL and Fortran, with a broad appeal that C# simply can't match.

Upgrading Database Drivers

When designing a transaction-oriented system—or any sort of application that relies upon a back-end database—it's tempting to forget about the performance characteristics of the connections between the different tiers. A fast database won't do you much good if it takes too long to move the data into it or to perform queries against it, because the connectivity middleware between the database and the application is slow or inefficient.

Nearly all tools and platform vendors provide some form of database driver capability, such as ODBC or .NET Data Providers on Windows, or JDBC in the Java world. The generic drivers provided with the tools can be adequate for simple applications, or for operating complex apps under a light load. It's important to realize, however, that these default drivers may not provide the best approach—ODBC or OLE DB, for example, may prove less efficient for high-volume transaction systems than native drivers. But, of course, going with native drivers may complicate development, or lock you into a specific database target.

The solution? In many or even most cases, those default drivers may be good enough. But when designing enterprise applications, choosing and using an improved driver or database access method may vastly improve overall system performance—in some cases, allowing the application to scale further, or be able to run on lower-end hardware. A driver upgrade is a solution worth looking into. ▮

GUEST VIEW

THE MONSTER IN THE BASEMENT

There's a monster lurking in the basement of your distributed applications. You can tame it, but you may also get bitten.

Modern computing technologies allow software developers to design and build complex applications better than ever. These powerful new software products make the sharing of information infinitely easier, bringing the world closer together and allowing corporations to act with maximum efficiency.

Software applications are extremely powerful due in large part to the "infrastructure" that supports them. This vast infrastructure is made up of the technologies that have survived the cruel evolutionary world of computing and matured into an industry standard. For example, let's take a look at the infrastructure that supports user input. In the early days of computing, supporting user input meant turning a keystroke into an 8-bit ASCII code, allowing software engineers to write software that handled character-based input. In the modern Web services era, this updated infrastructure allows developers to accept a user name from a Web-based form and use a public directory service to pull all of the user's information.

BENNY DAON

This infrastructure standardization process allows software developers to focus their efforts on addressing increasingly complex problems, such as business intelligence and corporate mergers. But cracks are beginning to appear in this infrastructure, especially the most unpredictable piece—the network.

The network has evolved to provide ever-higher levels of service over an increasingly complex physical infrastructure. Today, a single operating-system call can get a browser to display a specific URL. This single call is translated into quite a lot of network traffic coupled with complex network algorithms, such as session management, rate control, error discovery and recovery. No one would expect this code to perform the same way when running over a dial-up connection as it would over a high-speed LAN that is perhaps 2,000 times faster.

Over the years, many techniques have been developed to deal with the network's inability to "hide" its performance. One of the most common techniques was "text only" Web sites. In order to provide adequate performance for 28.8Kbit/sec dial-up users that made up the Internet population in its early days, most sites created text-only versions of their URLs. Unfortunately, this and other crude methods of dealing with network performance issues no longer work in the Web services era. Most applications are so complex that it's virtually impossible to isolate the areas that are most sensitive to network performance.

GUEST VIEW

WEB SERVICES 'GOTCHAS'

When developing complex Web services applications, users are better off with development products from multiple suppliers.

What we at Aberdeen Group are finding in the Web services area is that the major suppliers, such as IBM, Microsoft and Sun, don't present products that home in on some of the "gotchas" of Web services development. They have focused primarily on putting all the pieces together of a Web services tool set covering the standards, rather than on looking at how automated those pieces are.

On the other hand, third-party suppliers are focusing on how Web services development can be made automated. So if you really want to do Web services development well, you have to combine a major tool set with third-party projects. I think the "gotchas" are unusually important in this instance, which is a strong indication as to why you can't do very well in the long term just by using one tool set.

There are two major "gotcha" issues we have seen so far: performance and consistency.

Take the whole question of performance. When you create a Web services application, you're building from a model that is set up like the Web, with a provider and a consumer: You send out a request to a provider, and the consumer gets the response.

WAYNE KERNOCHAN

The problem is, the moment that you are dealing with data, you have many back-and-forth requests for a single transaction. Additionally, every time you go between these two applications that could be sitting side-by-side on the same server, you're going down a very big stack and back up again. This can create a huge slowdown—some users have initially reported up to an order-of-magnitude slowdown. So performance can really croak you.

When it comes to consistency, there's a very real temptation when developing a Web service to let each service be different—to create a free-for-all. The whole idea of a Web services provider is that it offers options upfront to whoever calls in from the outside world.

If you let in-house developers create each Web service separately, it will be totally unclear to the outside consumer as to what kind of options he or she will be able to get—you'll lose a lot of the simplicity benefits that Web services were supposed to deliver.

What you really want to do is set up standards for Web services provider code that offer such things as personalization and security—in every provider interface. So what you want in a development tool set is something that can make it easy for the developer to do that.

NEED FOR FLEXIBLE CODE

Indeed, a new factor has entered the development buying decision: the need for flexibility. There's a shift in the mean-

THE MONSTER

That "monster in the basement"—the unknown effect the network will have on an application—must be brought to light. Does the monster exist at all, or will the application perform properly? Maybe the monster will make the application too slow to use. Or maybe the monster is so vicious that it will endanger data integrity.

Developing applications in a lab environment and ignoring network performance until an application "goes live" is irresponsible. Think about it as developing a great Windows XP application when most of your users are running DOS-based machines. Most of the users would not be able to access the application, and it would be deemed useless—you would never develop such an application if you wanted to keep your job.

But because of the lack of tools, you have to develop great LAN applications when most of your users gain access via DSL connections. Many of the users may not be able to access the application and, once again, it will be deemed useless. The only difference between the Windows-DOS and the LAN-DSL scenarios is that in the latter you have a chance—maybe you'll get lucky.

Distributed applications are deployed over a massive WAN, usually the Internet. Luckily, the WAN is fast—but it's never fast enough. Just as memory will never be large enough and the processor won't be powerful enough, so the WAN will never be fast enough. And speed, or bandwidth, is only the tail of the monster. Latency, or the end-to-end propagation delay of the network, is the monster's ugly head—the No.1 enemy of performance.

The speed of light limits the travel time of information across the network, and every WAN connection has a latency that can impact travel time even more. This latency can be anything from a hundredth of a second up to almost half a second. In the former case, it might be a connection between two offices in the same city connected through the same Internet service provider. In the latter case, it might be a satellite backup connection between the same two offices.

Competing with bandwidth for the second place on the list of "performance's worst enemies" is network quality—one of the monster's many evils that may lead to data loss, congestion and sharp changes in overall performance.

The problem is that latency and quality are not as easily measured as bandwidth, where every kilobit appears on a monthly bill. In most cases, network latency and quality cannot be guaranteed and vary widely during the day. A major responsibility of a network manager's job is to monitor these parameters, but because modern IT organizations are vertically segmented into domain expertise, in most cases, developers and network managers are complete strangers when maybe they should be best friends.

The level of awareness of the monster is constantly rising, and it's driving the creation of new tools, including network performance emulators, that more accurately address application-performance problems. These solutions make performance management a part of every phase of the application development life cycle and enable collaboration among all IT teams—particularly the networking team and the development team. The result should be applications that are optimized for performance from the outset—i.e., dealing with performance issues before they affect end users and ensuring optimal utilization of the applications, servers and networks that make up the IT infrastructure.

It's going to be increasingly important to design distributed applications that take into account the real-world performance of local- and wide-area networks, especially when new software technologies such as Web services will provide the monster with a high-protein diet. And without thorough predeployment performance testing, the monster might devour the promised ROI and render mission-critical business applications useless.

Be careful. The sting of the monster's bite lasts a very long time. ▮

Benny Daon is the CEO and co-founder of Shunra Software Ltd., which sells network emulation products.

ing of flexibility. It used to mean open standards. But open standards were really a way to get at flexibility. Now what's happening is that the proportion of legacy code sitting out there is enormous, and it continues to claim a greater percentage of the total amount of code.

So, more and more, you have to define flexibility in terms of legacy code, ensuring that code is written or encapsulated so that it is as easy as possible to upgrade.

Flexibility now, in the development tools space, means more than just covering the standards—it means writing code that is easy to upgrade as technology changes.

Enterprises in the past were confronted with the "make-versus-buy decision," meaning that they could either develop software or buy a package of software. What tends to drive that decision is how easily the enterprise can satisfy its needs with an outside package that must be customized, versus how easy it is to develop it inside using the enterprise's own resources. Over the past two or three years, suppliers are increasingly coming up with infrastructure solutions that provide high-level middleware that will handle everything except the "last mile" of development. These infrastructure solutions can cut development time from two to six months, while avoiding the need to customize a packaged application.

With an infrastructure solution, you can speed up in-house development. So, what a business needs to take into account is whether the development solution is scalable, flexible, life-cycle-supporting and programmer-productive, on its own or in combination with third-party tools—and also whether it can be combined with APIs and libraries specialized for the needs of the industry or function to create a infrastructure solution.

Then, it's probably true that you have the best of both worlds. ▮

Wayne Kernochan is managing vice president of Aberdeen Group Inc., and author of "Web Services Development Solutions Buying Guide, Fourth Edition," at www.aberdeen.com/ab_company/hottopics/webservices.

LETTERS TO THE EDITOR

THE OPEN ROAD

In regards to your article ["OpenLoad 3.5 Tester Focuses on WebSphere, DB2," April 15, page 13, or at www.sdtimes.com/news/076/story20.htm], open standards solutions are the way to go. This sounds like another small company that will make the smart big boys tremble.

Charles D. Smith Jr.

THE RIGHT TOOLS

Steven J. Vaughan-Nichols' column ["Choosing the Right Java Tools," April 15, page 33, or at www.sdtimes.com/cols/javawatch_076.htm] was so true, and not just for Java, but for *any* programming platform. Steven makes great points, and the hammer-screw analogy is dead-on. Good stuff.

Elaina Russo
Teamstudio Inc.

PAY FOR PERFORMANCE?

I see the day in the future where server software is licensed based on processor performance ["One Processor or Two," March 15, page 4, or at www.sdtimes.com/news/074/story8.htm]. For example, let's say you pay $1,000 for a 2.0GHz XEON processor's speed, but then upgrade to a 3.0GHz XEON. The software vendor will have throttling built into the software until a $500 code is entered to allow the application to work at 3.0GHz.

There are greedy people out there. But thankfully, they haven't taken this leap, yet—I think.

Travis B. Creighton
CompuTron

TRUTH ABOUT COSTS

The article within your special report on Windows Server 2003 ["IDC: Want to Lower Costs? Mainframe's the Way to Go," March 15, page 29, or at www.sdtimes.com/news/074/special2.htm] was a good story. It is amazing how many people think that the low cost of purchasing a PC translates into low TCO. Thank you for printing the truth.

Douglas Streifling
Manager of Info Services
SierraPine Ltd.

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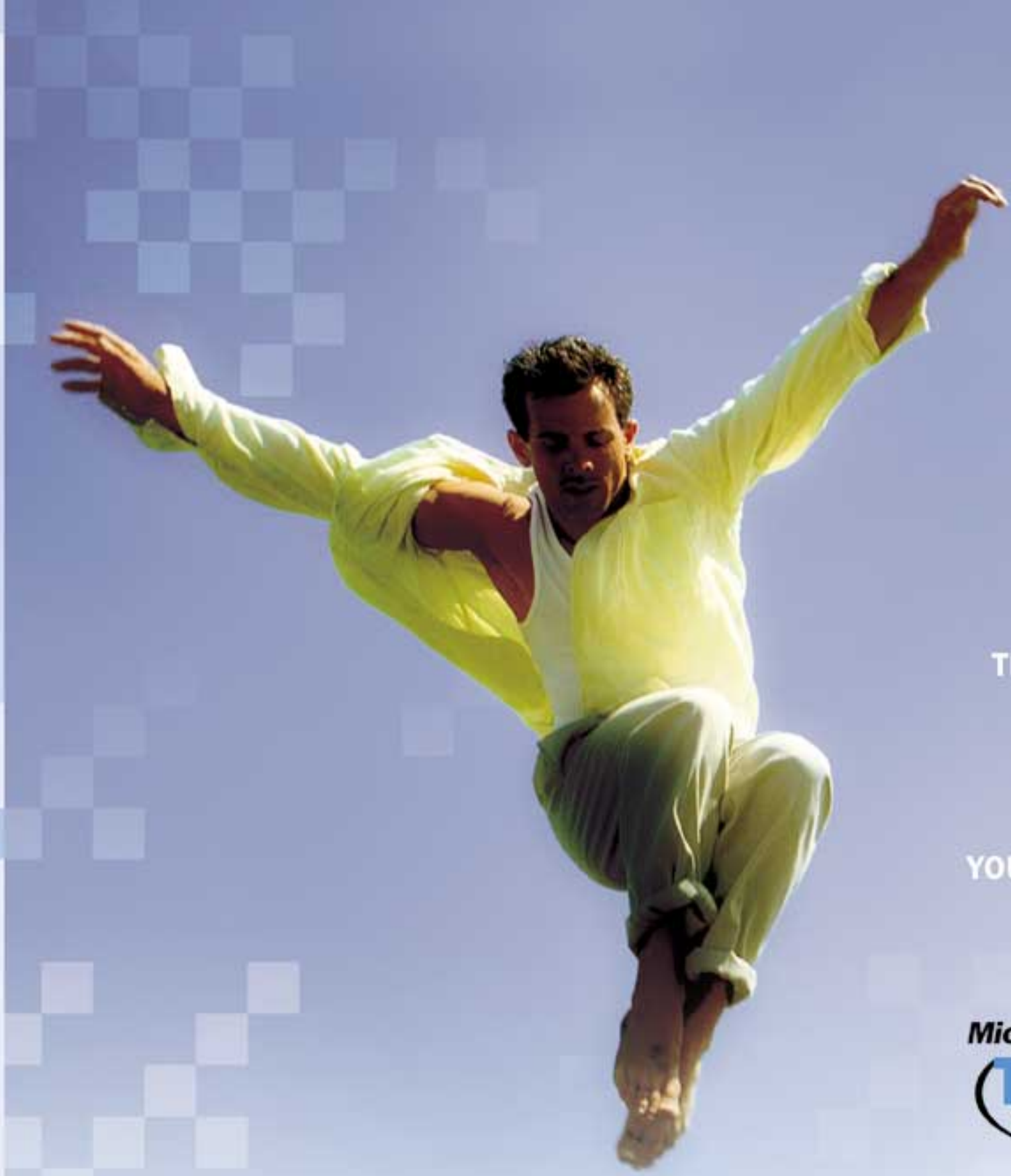

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BEST ARCHITECTURE PRACTICES

The defining characteristic of the .NET Framework is a unified programming model wiping away the barriers between programming languages and application types. There are no black boxes preventing a person with a Visual Basic background from using VB.NET to write a grid computing application; there are no tool limitations to prevent a C++ programmer from dragging and dropping 200 widgets on a form and pressing "Go!" That's one of the best things to happen for programmers in a long time—every .NET programmer is free (at least at a technical level) to explore that niche of the software development world that is most rewarding for them, creatively and financially. There is, however, considerable risk associated with this model.

While it's nice not to have arbitrary barriers between application types, different types of applications do require different approaches. One rarely thinks about conversational state between objects in a local application; one obsesses over it when designing an enterprise-scale system. Resource starvation is not on the radar screen of most Web programmers, but someone developing for a smart phone would be foolish not to address it from day one.

More accurately, these are not issues of design, but issues of architecture.

"Architecture" is one of the most overused words in the technical field, but when I say "software architecture," I mean "the unifying technical principles by which a program or system is organized." Something more than design, but still concrete enough to guide decisions at the code level.

Bill Gates is "chief software architect," proof enough that Microsoft has traditionally taken a higher-level view of architecture. I don't know what Bill Gates' workday is like, but I'm fairly sure it doesn't involve riding shotgun on the component structures in Office.

WINDOWS & .NET WATCH

LARRY O'BRIEN

In contrast, you can't spill a latte at a Santa Clara Starbucks without scalding a "Java architect" (of course, the latte was poured by someone still carrying his "VP of business development" business cards).

Microsoft's view is changing though, with the realization that .NET gives everyone enough rope to hang themselves, and those who do may very well mistake domain constraints with faults in the .NET implementation. To battle this, Microsoft has created two new excellent resources on http://msdn.microsoft.com: /architecture and /practices.

These sites contain literally thousands of pages on best practices and patterns for .NET software architecture. There are reference architectures, operational practices and "reference building blocks" that I think are particularly useful. The writing is occasionally too tactical; the operational practices in particular often mistake best practices for "best practices possible with Microsoft's current version of the tool." Although documenting current tools is important, the value of best practices lies, I think, in creating a universal base of understanding and communication that will extend over years.

This is not to say that architectural best practices don't evolve, of course, but one of the things that's most noticeable in the best books on software architecture, such as Martin Fowler's recent "Patterns of Enterprise Application Architecture" (Addison-Wesley, 2003) or the classic "Pattern-Oriented Software Architecture" by Buschmann et al. (Wiley & Son, 1996), is that they can help one analyze legacy systems or applications that can't yet be built.

So far, Microsoft's patterns and practices don't cover all the gaps between tactical-design decisions, computer-science theory and hard-won experience, but it's a very good start.

While all of Microsoft's patterns and practices are available online, a subset is available in print. Ironically, it appears to be the relatively short-lived operations guides that are most available in book form. Given that some of the other documents are book-length (the reference on building secure ASP.NET applications, for instance, runs 608 pages), one wishes that Microsoft made them available in a form amenable to printing.

With the .NET Framework breaking down the artificial fiefdoms between application types, attention to software architecture is going to become one of the critical success factors. Despite Microsoft's traditional focus on education at the more tactical level of APIs, the new MSDN sections and outreach programs show that Redmond is trying to get ahead of this shift.

Development managers should equally recognize and embrace this changing emphasis by supporting their best developers in educating themselves in architectural best practices and applying them. Be wary about gratuitous title inflation, though, as it can lead to nasty salary demands—according to Software Development Magazine's latest salary survey, the median "software architect" makes US$96,000—$11,000 more than "project leader" and a solid $16,000 more than those whose title was "software developer" or "software engineer." I wonder if Bill Gates participated in that survey? ■

Larry O'Brien is an independent technology consultant and analyst, and the founding editor of Software Development Magazine.

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DUMP MICROSOFT'S JVM

By my count, there have been 10 patches for serious security problems in Microsoft's JVM since 1999. That's getting close to about a patch a quarter. That's more than Internet Explorer, which is no major model of security itself. Is it just me, or is there something fundamentally wrong here?

These aren't little problems. This isn't a matter of the fonts not displaying properly. According to the documentation accompanying the Microsoft patches, these flaws have included enabling "an attacker to gain control over another user's system" (MS02-069)—the most serious of which could enable an attacker to gain complete control over a user's system (MS02-052) and "run code of an attacker's choice" (MS02-013). That certainly makes me feel warm and fuzzy about Microsoft's JVM.

And then there's the latest, April 10's MS03-011, in which it's revealed that the Microsoft JVM's ByteCode Verifier could not spot malicious Java code from being loaded. In practice this meant that someone could create an applet to delete files that would run just by someone opening a Web page with the embedded applet.

It's not like Microsoft's JVM, which it refuses to call a JVM lest it use the dreaded Java word, is any great shakes to begin with. After initially refusing to ship one out of corporate pique, when Redmond finally did resume shipping one, as Larry O'Brien pointed out in his April 1 Windows & .NET Watch column ("JVM Plug-And-Play," page 37, or at www.sdtimes.com/cols/winwatch_075.htm), it's an outdated piece of junk that supports only Java 1.02 or Java 1.1.4, which supports only the Abstract Window Toolkit (AWT) and not the Swing user-interface toolkit.

JAVA WATCH

STEVEN J. VAUGHAN-NICHOLS

Isn't it time to stop Microsoft from getting away with this? No one, except possibly a court, can force Microsoft to ship an updated JVM that would support at least Java 1.2 if not 1.4. But, even if someone did, do you really want your users running JVMs that in the past have proven to be downright dangerous?

End users have lower expectations than ever from their software. Each and every Microsoft JVM security hole has had the potential to destroy a customer's desktop. Ten times now, Microsoft itself has revealed serious security holes in its JVM. That's 10 times your customers have dodged the bullet of walking in some Monday morning and finding every last one of their desktop machines missing every last file; 10 times that they could have come in, started work and not been aware that a backdoor program had been installed that was making an additional copy of every file you saved to their rival's war-hacking server.

They put up with it because, like a lucky drunk driver, they haven't had a wreck…yet. But, it will happen. It's not a matter of *if* it will happen; it's a matter of *when* it will happen. Don't believe me? Remember SQL Slammer? That managed to kill Microsoft's SQL Servers directly and smack other systems with denial-of-service attacks. Slammer used a known security hole that had already been patched. If someone comes up with a combination of a malicious applet that uses the ByteCode Verifier hole and a popular Web page, I'm sure there still will be millions of vulnerable systems for it to attack.

So what can we do about it? Well, unlike Microsoft, which won't fundamentally upgrade its JVM—and based on its track record, probably couldn't anyway—we can't force-feed updates to customers. What we could do, though, when we deliver our applets, is include an applet that automatically checks for the Microsoft JVM's presence. Then, if we find it, without another JVM in place, we send the user a message, whether it be on the Web or in our CD-borne installation routine, reading something like this:

WARNING! Your machine is using an insecure, outdated JVM. Please press Enter to install a secure, current JVM, or quit to exit installation, and the application will not be installed.

If they press Enter, you then, of course, have your program install the latest and greatest Java Plug-In and Java WebStart and then put in your application.

You think that message is harsh? Why? Microsoft has done this for ages. Remember all those Web pages that gave warning messages that they'd only run with Internet Explorer? All those Web sites written in early versions of FrontPage that really wouldn't run properly with Netscape? If it's good for the goose, it's good for the gander.

Besides, is there anything factually wrong with the announcement? It's certainly outdated, and the existence of 10 major known and acknowledged security problems in the past few years certainly sounds insecure to me. And no one knows how many major holes are in there, or worse still, that a few crackers know about and haven't found a way to exploit yet.

No, if we really want to have Java applications on the desktop, it's time not to merely abandon the universal but woefully flawed Microsoft JVM, but to start pushing it out of the marketplace ourselves. ■

Steven J. Vaughan-Nichols is editor of Practical Technology (www.practical-tech.com) and has worked as a programmer for NASA and the Dept. of Defense.

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SCRIPTING EASY PROGRAM INTEGRATION

Scripting languages traditionally have fulfilled one of two missions.

The first, exemplified by the so-called "little languages" such as awk and pic, aims to do just one thing, but do it very well. This design philosophy originated at Bell Labs, where many of these tools were developed. Unix—another Bell Labs invention—very much encouraged this approach of stringing together many small, specialized tools.

Modern scripting languages, however, have moved away from this "narrow niche" design in favor of a wider scope of service, while maintaining their original, particular talent. JavaScript (now often called ECMA Script or JScript), for example, was designed to handle logic flow in HTML pages. While it continues to be adept at this task, it has clearly evolved beyond this original purpose.

The second application for scripting languages is the production of prototypes and one-off solutions. Languages in this category are inherently general-purpose. Their syntax is designed to be easy to learn, undemanding (most do not require that variables' types be declared before the variable is used) and semicompiled (that is, they compile to bytecodes). Scripts written in these languages can also be put into production and, in fact, frequently are. Typical languages in this group include Tcl, Python, Perl and Ruby.

Many of these modern scripting languages also share an excellent distinguishing feature: Most of them are embeddable. By this, I mean you can embed their runtime engine in your applications. This option enables your customers to write scripts to extend or modify your software. Microsoft offered similar capability with Visual Basic for Applications (VBA), and Trolltech is about to do the same for Qt programs with Qt Script for Applications (QSA), a JavaScript clone. Tcl and Python are particularly well-known for this embeddability.

MIDDLEWARE WATCH

ANDREW BINSTOCK

But the real benefit I believe enterprises will recognize from scripting is the integration of software. These scripting languages are increasingly emerging as the glue that enables disparate modules to be cobbled together into an application. They are to program integration what XML is to data integration. In particular, Perl and Python do this especially well. Let us look at these two just a bit more.

Perl gained immense popularity due to its convenient use in Web applications. It was one of the most effective solutions for dynamic Web pages before specialized options like PHP, ASP and JSP arrived on the scene. It could call programs written in other languages, manipulate their output, create input to other modules, and do about anything a hacker or systems administrator would want. In this sense, Perl solved a fundamental problem with the original Unix model, which required knowledge of many different scripting languages. Perl replaced them all by being good enough at almost all the tasks. It did, however, suffer from an arcane syntax that still today makes the language difficult to read and hard to learn quickly.

Python was developed from the ground up to be an easy-to-use, general-purpose scripting language. Its wide popularity testifies to its success in meeting this goal. The Python community developed numerous libraries for the language and then embarked on giving it truly superior capabilities for integration.

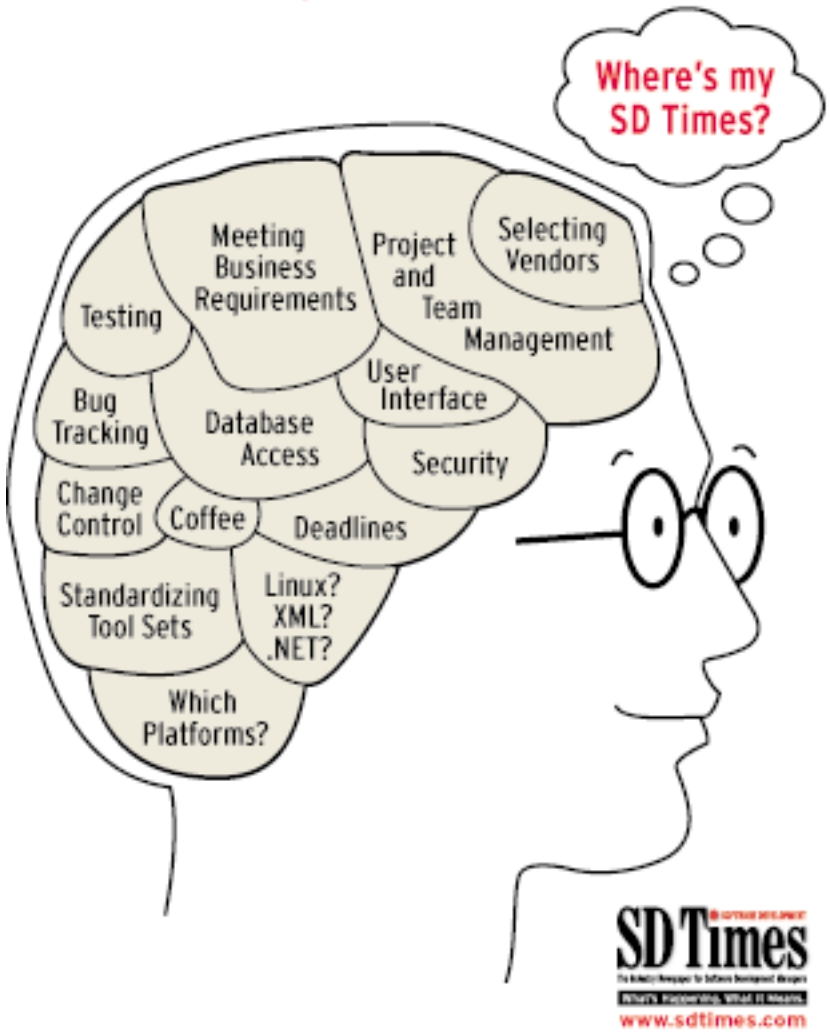
Python code can be used to glue Java components together—in fact, Jython (formerly JPython) is a version of Python that compiles down to Java bytecodes. Python modules also can be accessed from C and C++. COM objects and ActiveX components can be called from Python. There's all this, plus embeddability. And for a graphical front end, Python uses the Tk GUI library from Tcl for its interface—showing again its ability to reach across languages.

This remarkable universality makes Python attractive in today's enterprises as a simple way of cobbling together programs using resources from different technology bins—the ultimate in middleware for sites that don't want to use Web services for this kind of gluing.

If you're not using Python, you should consider downloading it at no cost from www.python.org. If you're used to C/C++ or Java, you'll find that Python is not difficult to learn. If the language had manuals, they would undoubtedly be the texts from O'Reilly & Associates (which has a knack for covering emerging languages earlier than most publishers). "Learning Python" and "Programming Python" are definitive treatments. "Jython Essentials" is the comparable text for Jython.

The primary commercial development environment for Python is VisualPython from ActiveState (www.activestate.com), which plugs into Visual Studio. Other commercial versions exist as well. Either way, I suspect you'll find Python a welcome addition to your software integration toolkit. ■

Andrew Binstock is the principal analyst at Pacific Data Works LLC.



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[Bell. Cue the ring announcer.]

"Ladies and gentlemen, welcome to the beautiful University Park Hotel on the sanguine campus of the Massachusetts Institute of Technology in historic Cambridge, Massachusetts. Tonight, it's the main event—12 rounds of championship coding, brought to you by TopCoder, in conjunction with the king of brews, Sun Microsystems.

"In the Java corner, standing 6 feet tall and weighing in at 113 pounds, wearing a Hawaiian shirt and paisley shorts, he goes by the handle Code Warrior. *Warrrr-iorrrrr!* In the .NET corner, standing at 5 feet 4 inches and weighing 195 pounds, wearing the tie-dyed propeller cap, here's Bit Player. *Play-errrr!*

"So now, ladies and gentlemen… LET'S GET READY TO PROGRAM!"

INDUSTRY WATCH

DAVID RUBINSTEIN

All right, so it's not Tyson and Lewis. Heck, it's not even a "Celebrity Death Match" starring Gates and McNealy. But to the finalists of the TopCoder Collegiate Challenge, victory can mean as much as $50,000, the undying respect of programming peers, and a possible fast track to employment with one of the industry heavyweights.

It's done online, via weekly matches and tournaments. The recent Collegiate Challenge, which concluded last month and had $100,000 in total prize money staked by Sun and graphics company Nvidia, began with 700 developers from around the world, who were narrowed down to 12 finalists. They were brought to MIT for two more days of competition, and when it was over, a junior at Duke University, David Arthur, was the last man standing. Using anonymous handles such as SnapDragon or LunaticFringe, the competitors talk trash and try to psych each other out as they vie for cash and permanent development positions.

The event was run by TopCoder, a company founded on the idea of automating a way for developers to evaluate their ability to solve problem statements by seeing where they rank against other developers. It has grown into an employment service for companies looking to fill jobs by providing hard data on potential candidates.

TopCoder writes the sample problems, which are generated by the highest-rated members of the service. There cannot be any errors or ambiguities because, as president and COO Jack Hughes related, "we're dealing with hundreds of extremely bright people who can get very angry." The tests are written in Java, C++ and C#, Hughes said, with Java and C++ each attracting 45 percent of TopCoder's 5,000 rated members, and C# grabbing the other 10 percent.

The tests also give some insight into the mindset of the people taking the test; reviewers can see if the candidate knows syntax, or understands and properly uses Java APIs.

Companies that seek developers by posting jobs on Web sites or in newspapers are inundated with resumes from the recently displaced as well as from the ranks of colleges, while only a few of the applicants might actually have the skill sets and development capabilities the companies are looking for, making the task of finding the right candidate extremely difficult. The same companies are starting to use TopCoder to give tests to job candidates before making hiring decisions, Hughes said.

"We provide all the competition statistics, and give all the code samples to a recruiting company to objectively look at the code of an individual," he said.

From that vantage point, Hughes has seen a shift in the market for programmers. First, he said, offshore development is hitting a wall, as those costs begin to climb while costs for U.S. programmers decline, and the talent pool thins out due to the sheer volume of work being sent abroad. Further, companies realize that managing an offshore project can be more difficult than they originally thought, as communication barriers often hinder requirements gathering and understanding, adding time and cost to these projects.

While Hughes said salaries of existing programmers might not be coming down, what's being offered to new hires has. "There are no more signing bonuses and stock-option packages," Hughes said. "Starting salaries for programmers right out of school, if they find something, are not what they were in '98."

Hughes said he is surprised by the number of jobs that are now available. "You know, eBay and Google are still among the fastest-growing companies in the world." Not only that, but older companies are now facing the fact that they must update systems and adopt new technologies—efforts that were put on hold by the economic recession.

The next TopCoder challenge is scheduled for November. Perhaps a steel-cage match?

David Arthur is presented with a check by Reggie Hutcherson of Sun and Jack Hughes of TopCoder.

David Rubinstein is executive editor of SD Times.

BUSINESS BRIEFS

Iona Technologies Inc. reported a loss per share of 36 cents on revenues of US$17 million, based on generally accepted accounting principles, for the quarter ended March 30. For the same quarter a year ago, Iona posted revenues of $39.5 million and a loss of 23 cents per share. The loss continues a downward trend for Iona, which posted a loss of $28.1 million, or 88 cents per share, based on revenues of $123.1 million for 2002. The company issued guidance that expects second-quarter revenues in the range of $17 million to $19 million and a net loss per share in the range of 59 cents to 72 cents . . . **Pervasive Software Inc.** reported third-fiscal-quarter revenues of US$10 million and net income of $1.8 million, or 10 cents per share, compared with net income of $1.7 million, or 9 cents per share, for the same period last year. Pervasive expects revenues in the fourth quarter to be around $10.2 million with net income around $2 million . . . **Sybase Inc.** reported first-quarter revenues of US$181.6 million, down from $211 million a year ago, and posted pro forma earnings per share of 17 cents, compared with 21 cents last year. Pro forma net income for the quarter was $16.1 million, down from $21.1 million in 2002 . . . **Apple Computer Inc.** showed a decline in second-quarter profit to US$14 million, compared with a net profit of $40 million a year ago. Revenue for the period was $1.475 billion, down 1 percent from last year, the company reported . . . **Sun Microsystems Inc.** reported third-quarter revenues of US$2.79 billion, representing a decline of more than 10 percent from the $3.1 billion brought in last year. Meanwhile, net income for the quarter was $4 million, or zero cents per share, as compared with a net loss of $37 million, or 1 cent per share, in 2002 . . . The board of directors of **Ascential Software Corp.** is proposing a 1-for-4 reverse stock split, to reduce the number of outstanding common shares from roughly 231.5 million to about 58 million. ■

CALENDAR OF EVENTS

IDUG 2003 May 19–23
Las Vegas
INTERNATIONAL DB USERS GROUP
http://conferences.idug.org

TechEd June 1–6
Dallas
MICROSOFT CORP.
www.microsoft.com/usa/teched

Software Management & Applications of Software Measurement June 2–6
San Jose
SOFTWARE QUALITY ENGINEERING
www.sqe.com/sm

JavaOne June 10–13
San Francisco
SUN MICROSYSTEMS INC.
http://java.sun.com/javaone

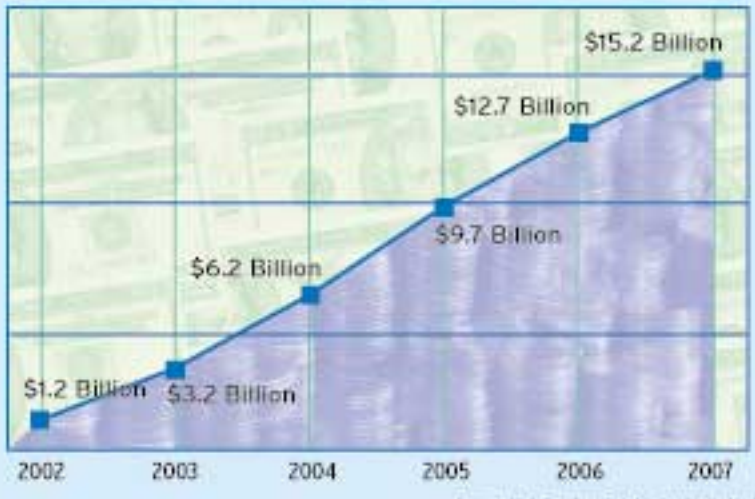
USENIX Annual Technical Conference June 9–14
San Antonio
ADVANCED COMPUTING SYSTEMS ASSOCIATION
www.usenix.org/events/usenix03

For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

DATA WATCH

Total U.S. Spending on Web Services



Web services are on a fast track for industry growth, according to new research and projections from International Data Corp. Its latest numbers, updated in February, show that total Web services spending for hardware, software and services came to $1.2 billion in the U.S. IDC is forecasting that will more than double this year, to $3.2 billion, and nearly double again in 2004.

After that, the pace of growth slows—but continues at a healthy rate as the industry becomes more established. Still, with a projected $15.2 billion in spending in 2007, this represents a compound annual growth rate of better than 66 percent during this period.

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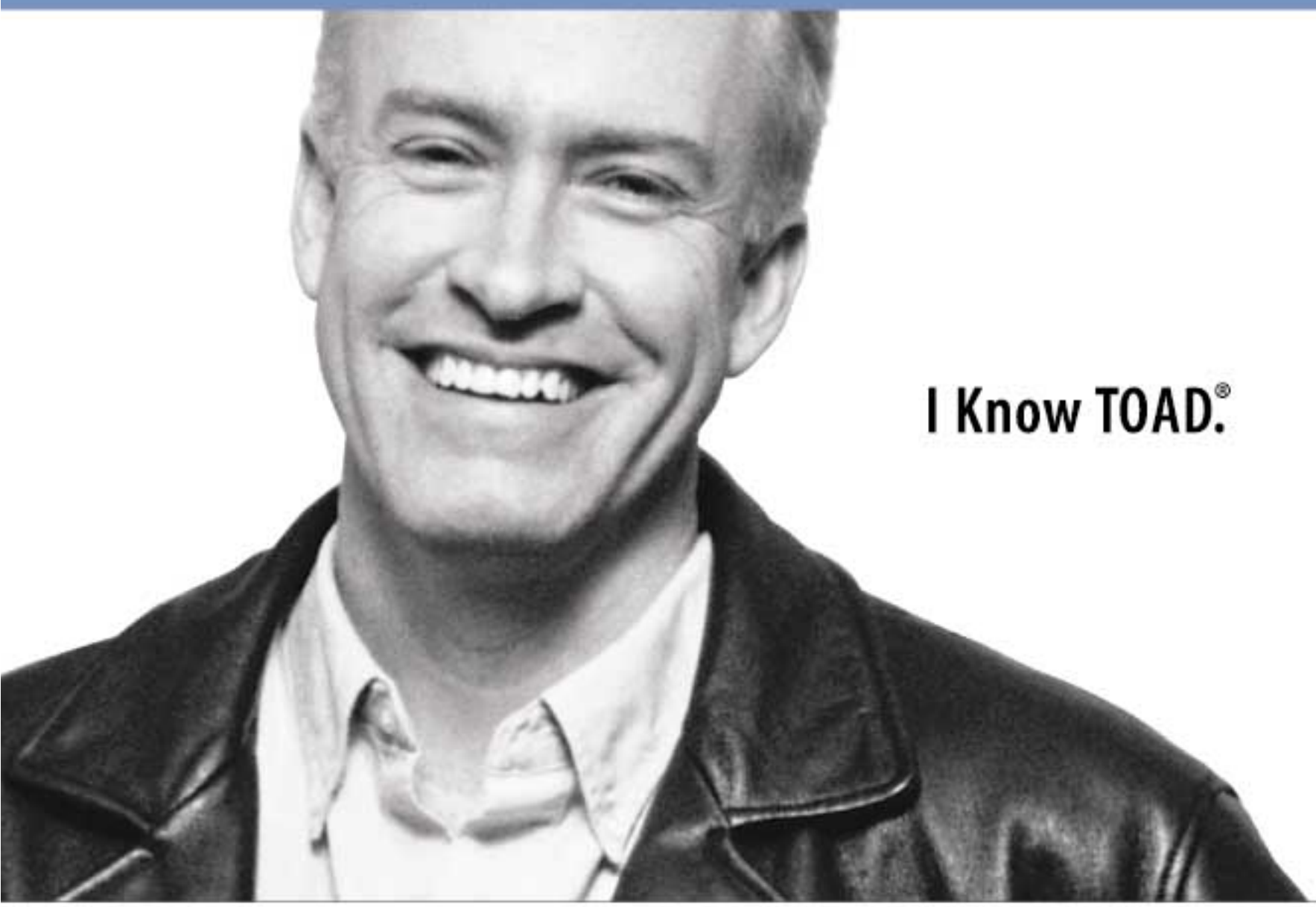

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